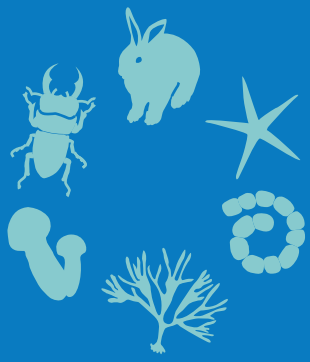
Insect Fauna of Korea

Volume 13, Number 8

Arthropoda: Insecta: Hymenoptera

Andrenidae



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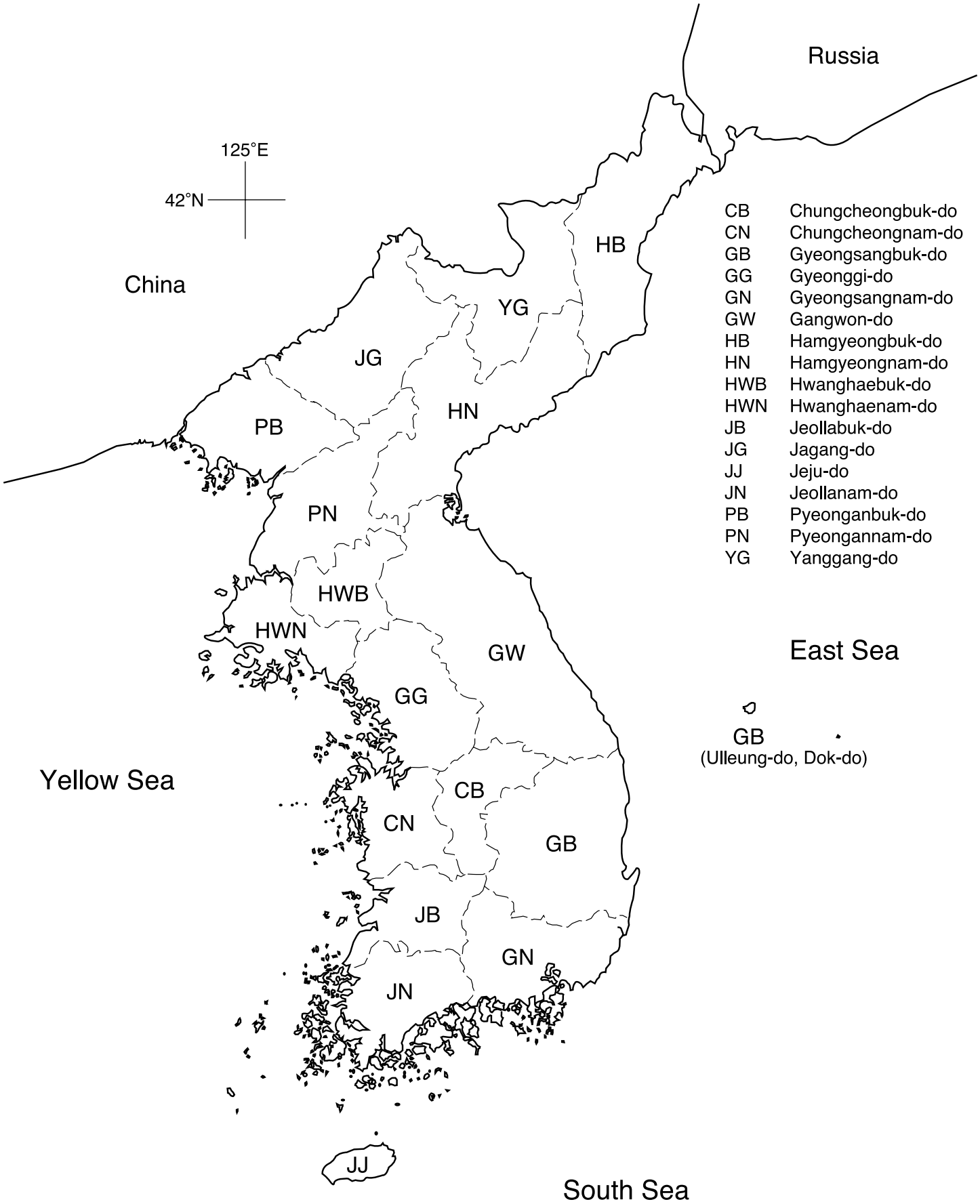
Russia
125°E
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China
HB
YG
JG
HN
PB
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HWB
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GW
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CB
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JB
GN
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East Sea
GB
(Ulleung-do, Dok-do)
Yellow Sea
South Sea
CB Chungcheongbuk-do
CN Chungcheongnam-do
GB Gyeongsangbuk-do
GG Gyeonggi-do
GN Gyeongsangnam-do
GW Gangwon-do
HB Hamgyeongbuk-do
HN Hamgyeongnam-do
HWB Hwanghaebuk-do
HWN Hwanghaenam-do
JB Jeollabuk-do
JG Jagang-do
JJ Jeju-do
JN Jeollanam-do
PB Pyeonganbuk-do
PN Pyeongannam-do
YG Yanggang-do

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Andrenidae

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A Korean translation of this issue is simultaneously published for Korean speaking readers. This English version therefore should be regarded as an original publication that has nomenclatural priority.

The Flora and Fauna of Korea logo was designed to represent six major target groups of the project including vertebrates, invertebrates, insects, algae, fungi, and bacteria. The book cover and the logo were designed by Jee-Yeon Koo.

Preface

The biological resources include all the composition of organisms and genetic resources which possess the practical and potential values essential to human live. Biological resources will be firmed competition of the nation because they will be used as fundamental sources to make highly valued products such as new lines or varieties, new material, and drugs. As the Nagoya Protocol was adopted in 2010 and entered into force in the 12th Conference of Parties of the Convention on Biological Diversity (CBD) in 2014, it is expected that the competition to get biological resources will be much intensive under the rapidly changed circumstance on the access and benefic sharing of the genetic resources (ABS). Therefore, each nation is investigating and clearing information of native species within its territory in order to secure its sovereignty rights over biological resources.

The National Institute of Biological Resources of the Ministry of Environment has been publishing the 'Flora and Fauna of Korea' since 2006 to manage biological resources in comprehensive ways and to enhance national competitiveness by building up the foundation for the sovereignty over biological resources. Professional research groups consisting of professors and related experts of taxonomy examined systematically a total of 12,631 species for the past eight years to publish 151 volumes in both Korean and English versions, and two volumes of World Monograph covering 216 species. This year, 11 volumes of the Flora and Fauna of Korea each in Korean and English versions including 517 species of invertebrates, insects, vascular plants, algae and fungi are additionally published. Flora and Fauna of Korea were the first professional records to describe all the species of the nation in a comprehensive way, and they would contribute to level up the taxonomic capacity. Furthermore, publication of flora and fauna through identification of native species and investigation of national biota would be helpful to declare sovereignty rights over our native biological resources, be used as positive proof, and be utilized to provide the basic information of biological resources for industrial application.

The National Institute of Biological Resources of the Ministry of Environment will continue to accelerate the project of the publication of the 'Flora and Fauna of Korea'. Personally I would like to express my sincere appreciation for Professor Dongpyo Lyu of Sangji University, Dr. Heung-Sik Lee in Animal and Plant Quarantine Agncy and Emeritus Professor Osamu Tadauchi of Kyushu University who have continuously made a lot of efforts to publish an excellent version of Korean fauna.

Sang-Bae Kim
President
National Institute of Biological Resources

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Panurginus crawfordi Cockerell, 1914

Introduction

The bee family Andrenidae is a very large group of bees called as mining bees. It includes about 2,500 species in the world. They are separated from the other bee families by having the short-tongue, two subantennal sutures below each antenna, and glossa pointed and short or long (Michener, 2007). This family is classified into four subfamilies, Alocandreninae, Andreniae, Panurginae, and Oxaeinae (Michener, 2007). According to Michener (2007), the subfamily Alocandreninae has one species in the world, the subfamily Andreninae 1,399 species, the subfamily Panurginae 1,268 species, and the subfamily Oxaeinae 16 species. The subfamily Oxaenae is so different from the others in as several characters so resembles other bees of Colletidae. Among them, two subfamilies, Andreninae and Panurginae are distributed in Korea. Most Korean species belong to the genus *Andrena* in the subfamily Andrenidae.

The family Andrenidae occurs on Holarctic region except for Australia and is in the tropical Asian region. All members of the Andrenidae make the nest in the soil. They burrow and make cells, one or a short series at the end of each lateral burrows. The egg is laid on the pollen mass. No andrenid spins a cocoon.

In Korea, the genus *Andrena* is one of the predominant bees mainly from early to late spring. Therefore, this group can be regarded as one of the important pollinators of spring-blooming crops and orchard trees because the female collect pollens to providing food for their larvae in the narrow region. They might forage on special plant repeatedly, so they do play important role for pollination of wild plants in mountainous area. The Andrenidae is mainly monovoltine, however several species are polyvoltine so they have 2 generations in Korea.

In this book, Korean Andrenidae fauna is reviewed based on the examined speciemens deposited in 4 entomoligcal laboratories both Korean and Japan. The authours examined many speciemens in the Kyushu University, Korean University, Seoul National University and Animal and Plant Quarantine Agency. Through we have found some undescribed species in our examination from Korea, we will publish them in near future and we present 59 species from Korea in this book. Four known species are, for the first time, recorded from Korea: *Andrena maetai*, *Andrena aburana*, *Andrena falsifissima* and *Andrena macroceps*. However, we did not find the type speciemens of *Andrena magnipunctata* Kim et Kim, *Andrena plumosa* Kim et Kim (= *plumosella*) and *Andrena kyusani* in Korean Universtiy Museum and several recorded species are doubtfull in distribution because of misidentification or speciemens unexamined.

We provide short description of each species for identification and remarks and its distribution for species discrimination points.

Materials and Methods

Collection of Specimens

The authors has collected many *Andrena* speciems from Korea. The speciemens exmined in this book are based on the following institutions and personal collections: the Kyushu University, Korea University, Seoul National University and Lee's collection in Animal and Plant Quarantine Agency.

Terminology

The terminology in the description mostly follows that of Hirashima (1962) and Michener (2007). The terms used are as follow:

1. Body length: Measured from base of antennal fossae to the apex pygidial plate.
2. Wing length: Measured in a straight line from the base of tegula to the tip of the forewing.
3. Head length and width: Length from the apicomedian margin of the clypeus to the vertex of head; width from the compound eyes at lower level of antennal fossae.
4. Flagellar segmensts 1, 2, and 3: Mesured aong lower surface of flagellar segments 1, 2, and 3.
5. Facial fovea length and width: Maximum length and width of facial fovea.
6. Clypeus length: Measured from the apicomedian margin of the clypeus to the supraclypeal suture.
7. Process of labrum: Raised basal area in the center of the labrum.
8. Genal width: Widhth in profile view of genal area.
9. Pronotal median line: A weak longitudinal suture along aubapical margin of the pronotum.
10. Mesonotal width: Measured between the outer rim of tegulae.
11. Humeral angle and ridge: Psterolateral margin of the pronotum froms prominent angle, with the extreme lateral aspect produced forward and downward as more or less dinstinct ridge.
12. Propodeal enclosure: The dorsomedian triangular area of the propodeum.
13. Propoeal corbicula: Lateral surface of the propodeum with encircling long incurling plumose hairs, forming a pollen basket . If dorsal fringes are long and well arranged it indicates the state "well developed", if anterior fringes are long and dense hairs, without internal hairs, it indicates the state "completely developed".
14. Trochanteral floccus: Long, curling plumose hairs on the basal area of the hind trochanter. If most hairs are long and curling it indicates the state "perfect".
15. Sternal subapical fimbriae: Subapical bands erect to suberect on outer third of the metasomal sterna 2 to 5.
16. Tesselation: Tessellate surface is checked with regular close set ridge. It divided into the state "weak", "fine" and "dense" tessellation.
17. Shagreening: Shagreended surface is covered with close-set roughness, like the rough surfaced horse leather.
18. Granuating: Garanular surface has dense and regular punctuation.

Abbreviations

The following is a list of museums and institutions used in this book including the type depository. Collection abbreviations marked with an asterisk were not listed on the website or are modified abbreviations.

AMNH	American Museum of Natural History, New York, USA
DEI	Deutsches Entomologisches Institut, Everswald, Germany
KEIU	Entomological Institute, Korea University, Seoul, Korea
JELKU	Entomological laboratory, Faculty of Agriculture, Kyushu University, Fukuoka, Japan
SNUE	Insect Systematics laboratory, Seoul National University, Seoul, Korea
QIAL	Lee'e private bee collection, QIA, Korea

TS Type species; TD Type Depository; TL Type Locality

Abbreviation of collecting locality in Korea

Northern part
HB: Hamgyeongbuk-do
HN: Hamgyeongnam-do
RG: Ryangang-do
JG: Jagang-do
PB: Pyeonganbuk-do
PN: Pyeongannam-do

Central part
HH: Hwanghae-do
GW: Gangwon-do
GG: Gyeonggi-do (including Seoul)
CB: Chungcheongbuk-do
CN: Chungcheongnam-do

Southern part
GB: Gyeongsangbuk-do
GN: Gyeongsangnam-do (including Busan)
JB: Jeonlabuk-do
JN: Jeonlanam-do

Island
JJ: Jeju-do

The **Specimen examined** section includes all label data of the available specimens from various collections in Korea and abroad, as well as some personal collections, particularly in the case of N. Korea. The **Floral records** section cites floral records visited by each species are based on specimen label data or published papers. This information includes not only Korea but also the data of adjacent countries, including the Russian Far East, China, and Japan, but unfortunately we are unable to indicate details on their original sources. The **Distribution** section lists the countries and regions where the taxa are distributed. When **Korea** is mentioned it means a local distribution, indicating North, Central, South, and JJ. The **Remarks** section provides information on the report of a species in Korea and other relevant taxonomic information.

Taxonomic Notes

Class Insecta
Gon-chung-gang (곤충강)

Order Hymenoptera
Beol-mok (벌목)

Family Andrenidae
Ae-kkot-beol-kwa (애꽃벌과)

Members of this family have the following morphological characters: size of species from small to large (body length: 4−18 mm); Mostly body shape is slender; two subantennal sutures running the inner and outer edges of the antennal sockets; facial fovea well developed; labrum boroad than length; tip of glossa acute and pointed and short or long; scopa on propodea and hindlegs present; pygidium present; marginal cell normal, three submarginal cells present.

Type: *Andrena*.

Species: Over 2,500 species (59 in Korea).

Distribution: Worldwide.

Korea: From Jeju to North Korea. GW, GG, GB, GN, CB, CN, JB, JN, JJ.

Key to Subfamilies of the Family Andrenidae in Korea

1. Forewing with two submarginal cells. Apex of marginal cell truncate ····· Panurginae
− Forewing with three submarginal cells. Apex of marginal cell pointed or narrowly rounded on or near wing margin. ····· Andrenidae

Subfamily Andreninae
Ae-kkot-beol-a-kwoa (애꽃벌아과)

Genus *Andrena* Fabricius, 1775
Ae-kkot-beol-sok (애꽃벌속)

Andrena Fabricius, 1775: 376. TS: *Apis helvola* Linnaeus, 1758, by designation of Viereck, 1912: 613.
Anthrena Illiger, 1801: 127. Unjustified emendation of *Andrena* Fabricius, 1775.
Anthocharessa Gistel, 1850: 82. TS: *Apis helvola* Linnaeus, 1758. unjustified replacement for *Andrena* Fabricius, 1775.

Members of this genus is easily distinguied from the others by the presence of facial foveae which are covered with minute dense hairs. The two subantennal sutures runs the inner and outer edges of the antennal sockets and define the antennal area. The marginal cell is pointed or narrowly rounded.

Key to Subgenera of the Genus *Andrena* in Korea

Female

1. Pronotum without humeral angle and dorsoventral ridge ····· 2
− Pronotum with humeral angle and dorsoventral ridge or almost so ····· 13
2. Inner surface of hind femora with linear spines, tibial scopal hairs plumose throughout ····· *Chlorandrena*
− Inner surface of hind femora without linear spines, if presenting, then pronotum with weak humeral angle; tibial scopal hairs simple ····· 3
3. Posterior spur of hind tibia broadened and abruptly bent near base or slightly broadened; [propodeal enclosure coarsely sculptured] ····· 4
− Posterior spur of hind tibia normal ····· 6
4. Hairs on mesoscutum and scutellum forming dense velvety mat, if posterior spur of hind tibia normal, the integument coarsely punctated (in Asian species) ····· *Campylogaster*
− Hairs on mesoscutum and scutellum not forming dense velvety mat ····· 5
5. Propodeal enclosure coarsely wrinkled, usually with posterior carina; facial fovea broad ····· *Plastandrena*
− Propodeal enclosure irregularly rugulosed, without posterior carina; facial fovea narrow, separated from eye by broad space. Propodeal enclosure large; metasomal terga finely punctate with hair bands ····· *Poecilandrena*
6. Hind tibia broad near apex, cuneate; tibial scopal hairs short or moderately long; propodeal corbicula complete, naked interiorly ····· *Simandrena*
− Hind tibia and tibial scopal hairs normal; propodeal corbicula without anterior fringes, interior with simple hairs ····· 7
7. Fore wing with first transverse cubital vein ending within two or three vein widths or less of pterostigma; metasomal terga nearly impunctate; small bees, usually about 7 mm in length or less than ····· *Micrandrena*
− Fore wing with first transverse cubital vein ending more than three vein widths of pterostigma; metasomal terga impunctate to punctate; medium-sized bees, more than 7 mm in length ····· 8
8. Clypeus flattened, with oval punctures; process of labrum narrowed with curved rugulae ····· *Taeniandrena*
− Clypeus rounded or convex with rounded punctures; process of labrum various ····· 9
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− Posterior depressions of metasomal terga narrow, less than a half length of tergum; propodeal enclosure variously sculptured, without posterior carina ····· 10
10. Propodeal corbicula well developed with incomplete anterior hairs; propodeal enclosure small, medium-sized to large bees ····· *Melandrena*
− Propodeal corbicula without anterior fringes; propodeal enclosure large, small to medium-sized bees ····· 11
11. Face from antennal fossae to vertex strongly convex; dorsal face of propodeum smooth to

densely tessellate, not roughened ..... *Oreomelissa*
− Face from antennal fossae to vertex straight 12
12. Facial fovea broad. Dorsal face of propodeum smooth with fine punctures, unshagreened ..... *Calomelissa*
− Facial fovea narrow. Metasomal terga impunctate or weakly and sparsely punctate; propodeal enclosure usually tessellat ..... *Euandrena*
13. Pronotum with humeral angle, but dorsoventral ridge lacking; [clypeus usually with impunctate median line; metasomal terga nearly impunctate] ..... *Hoplandrena*
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− Propodeal corbicula well to poorly developed without anterior fringes, with internal simple hairs 19
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− Fore wing with three submarginal cells 16
16. Metasomal terga without hairs bands or weak; middle basi-tarsus normal; metasomal terga usually impunctate or with weak minute punctures ..... *Andrena s. str.*
− Metasomal terga with distinct hair bands 17
17. Middle basitarsus broadened medially, equal or broader than hind basitarsus; hind tibia cuneate with short scopal hairs ..... *Cnemiandrena*
− Middle basitarsus and hind tibia normal; tibial scopal hairs long 18
18. Facial fovea broad; subgenal coronet present; if propodeal corbicula with internal hairs, then pronotum with weak humeral angle and ridge ..... *Leucandrena*
− Facial fovea narrow; subgenal coronet lacking ..... *Larandrena*
19. Clypeus distinctly protuberant, surface smooth to finely granulate with scattered weak punctures; facial quadrangle longer than broad; facial fovea narrow ..... *Stenomelissa*
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Male

1. Fore wing with two submarginal cells; clypeus and lower paraocular area yellowish white; pronotum with distinct humeral angle and dorsoventral ridge; sternum 6 reflexed and forming apicolateral angles ..... *Parandrena*
− Fore wing with three submarginal cells 2
2. Pronotum without humeral angle and dorsoventral ridge 3
− Pronotum with humeral angle and dorsoventral ridge or almost so 15
3. Clypeus yellow to white, usually with lower paraocular area maculae 4
− Clypeus and lower paraocular area entirely black 8
4. Process of labrum deeply emarginate, bidentate; vertex tall; propodeal enclosure coarsely rugose; dorsal face of propodeum and metasomal terga deeply and closely punctate ..... *Campylogaster*
− Process of labrum emarginate or entire, not bidentate; vertex short to tall 5
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10. First transverse cubital vein close to pterostigma; metasomal terga usually impunctate, small bees, less than 7.0 mm ····· *Micrandrena*
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12. Propodeal enclosure small ····· *Melandrena*
− Propodeal enclosure moderate to large ····· 13
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− Propodeal enclosure with lateral sutures not carinate ····· *Euandrena*
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− Clypeus entirely black ····· 18
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− Malar space short or linear; pronotum with humeral angle normal ····· 17
17. Lower paraocular area with large maculae; propodeum slanting toward apex ····· *Holandrena*
− Lower paraocular area with small maculae or black; propodeum not slanting ····· *Larandrena*
18. Process of labrum strongly reflexed, elevated well above margin of clypeus, excavate below ····· ····· *Cnemiandrena*
− Process of labrum entire or emarginate, not reflexed ····· 19
19. Metasomal terga without hair bands or weak; mandibles usually with basal tooth; if tooth lacking, then malar space elongate or tergal fasciae distinct ····· *Andrena s. str.*
− Metasomal terga usually with hair bands; mandibles without basal tooth ····· 20
20. Malar space elongate with outer tooth; pronotum with dorsoventral ridge crossed by pronotal suture ····· *Hoplandrena*
− Malar space short or elongate, without outer tooth; dorsoventral ridge not crossed by pronotal

suture. Propodeal enclosure not wrinkled; Metasomal terga impunctate or weakly punctate ····
····· *Leucandrena*

Subgenus *Andrena* Fabricius, 1775

Andrena Fabricius, 1775: 376. TS: *Apis helvola* Linnaeus, 1758, by designation of Viereck, 1912: 613.
Anthrena Illiger, 1801: 127. unjustified emendation of *Andrena* Fabricius, 1775.
Anthocharessa Gistel, 1850: 82. TS: *Apis helvola* Linnaeus, 1758. unjustified replacement for *Andrena* Fabricius, 1775.

1. *Andrena* (*Andrena*) *aburana* Hirashima, 1962 (Pl. 1, Female: A; Male: B)
A-bu-ra-na-ae-kkot-beol

Andrena (*Andrena*) *aburana* Hirashima, 1962: 146−149, Type: male, TL: Kyushu, Japan; TD: JELKU [female & male, Japan]; Hirashima, 1966: 103, 116 [female & male, in key]; Tadauchi et al., 1987: 44−45; Gusenleitner and Schwarz, 2002: 54−55; Xu and Tadauchi, 2012, J. Fac. Agr., Kyushu Univ., 57: 99, 113 [China]; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 69 [photos].

Description: Based on the original description by Hirashima (1962).
Female. Body length 10 mm.
Pubescence: Body hairs not long; Hairs on head essentially dull whitish except for blackish on sides of face, frons, vertex, those on clypeus sparse. Hairs on mesoscutum short and sparse, black to brownish which is characteristic among species in the subgenus *Andrena*; those on scutellum black medially; hairs on propodeum pale fulvous; tibial scopa brownish to fuscous above, silver white in front; tibial scopa not large, compact, composed of more or less long, well arranged, simple hairs. Hairs on 1st and base of 2nd metasonal terga long, pale, those of the following terga short, pale and fuscous; hairs on posterior margins of terga downy, forming an indistinct band of 2nd to 4th; caudal fimbria fuscous.
Structure: Clypeus strongly convex, smooth and shiny with sparse punctures irregular in size and distribution on lower portion, with tessellation on upper portion; clypeus broadly impunctate medially, with a trace of median, raised, impunctate line. Mesoscutum densely tessellate, with weak punctures; scutellum nearly as in mesoscutum; propodeal enclosure tessellate posteriorly, rugulose basally; Metasomal terga densely tessellate, weakly punctate; posterior depressions of terga broad, not sharply indicated.
Male. No record from Korea.

Remarks: The female of this species is similar to that of *Andrena saragamineensis* Hirashima, 1962 from Japan, but is distinguished by the more strongly convex and shiny clypeus, the more tessellate and less punctate mesoscutum, and the presence of blackish hairs on the mesoscutum (Xu and Tadauchi, 2012).
Specimens examined: [JELKU] JAPAN: Holotype male and allotype female (Kyushu Univ.), Mt.

Homan, Fukuoka Pref., Kyushu, Japan, holotype, 18.iii.1951, Y. Hirashima; allotype, 19.iv.1931, K. Yasumatsu. [SNUE] KOREA: 1♀, GG Mt. Myung-Ji, 1.vi.1996, SM Kim leg.

Floral records: Japan: *Brassica campestris* L.; *Prunus mume* Sieb. et Zucc.; *Salix* sp..

Distribution: Korea (Central), Japan (Honshu, Sado Is., Shikoku, and Kyushu), China (Beijing, Jilin Prov.).

Region: Eastern Palaearctic.

Korea: GG.

2. *Andrena* (*Andrena*) *benefica* Hirashima, 1962 (Pl. 1, Female: C; Male: D)
Jag-eun-ae-kkot-beol

Andrena (*Andrena*) *benefica* Hirashima, 1962, 12: 151−154, Type: male, TL: Kyushu, Japan, TD: JELKU [female & male, Japan].

Andrena (*Andrena*) *benefica*: Hirashima, 1966: 104, 115 [female & male, in key]; Tadauchi et al., 1987: 14, 45−46; Osytshnjuk, 1995: 516, 522; Tadauchi et al., 1997: 188−189 [in list]; Gusenleitner and Schwarz, 2002: 121; Lee & Paik, 2003: 126; Paek et al., 2010: 212; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 72 [photos].

Andrena (*Andrena*) *binifica* [sic]: ESK & KSAE, 1994: 266.

Andrena (*Andrena*) *benifica* [sic]: Kim & Kim, 1983: 5−6 (first Korean record); Kim, 1996: 209.

Description: Based on the original description by Hirashima (1962).

Female. Body length 9.5 mm. Smallest species in the subgenus *Andrena*.

Pubescence: Hairs on head short, not dense, white on face including clypeus, occiput and, fuscous on frons, vertex; facial fovea chocolate above, paler below. Hairs on mesoscutum short to long, not specially dense, pale yellowish brown above, whitish below, with or without sparse brownish hairs; tibial scopa silver white, narrowly and slightly brownish above basally; tibial scopa small, not specially compact, composed of well arranged, short hairs. Hairs on metasomal terga scanty, white, not mixed with brownish ones; hairs on posterior margins of 2nd to 4th terga downy, slightly denser than elsewhere, forming an obscure hair band on each tergum; caudal fimbria distinctly yellowish.

Structure: Clypeus strongly convex, more or less broadly tessellate basally, smooth or nearly so and shiny apically, coarsely and strongly punctate with punctures irregular in size and distribution; clypeus broadly smooth and sparsely punctate medially; cheeks about as wide as eyes seen in profile, receding. Mesoscutum densely tessellate, distinctly and not so densely punctate; scutellum broadly nearly smooth or weakly tessellate, sparsely punctate, shiny; propodeal enclosure large, densely tessellate, rugose basally; hind tibiae short, distinctly expanded subapically. Metasomal terga densely tessellate, nearly impunctate, feebly shiny; posterior depressions of terga broad, not well indicated.

Male. Body length 7.5 mm.

Pubescence: Hairs on head long, not specially dense, nearly dull white or occasionally distinctly yellowish on clypeus, fuscous on sides of face, frons and vertex. Hairs on thorax long, not specially dense, pale or sometimes pale yellowish brown, without admixture of brown or fuscous hairs. Hairs on 1st and base of 2nd terga long, sparse, those on the following terga short, sparse, nearly

uniformly pale; hairs on 6th terga yellowish.

Structure: Head large, much broader than thorax seen from above; mandibles long, slender, falciform, with sharp apices; basal projection of mandible large, nearly triangular; malar space narrow, about one-fourth as broad as base of mandible; process of labrum short, slightly convex apically; clypeus rather well convex medially, tessellate except for narrow median portion where it is nearly smooth, shiny, more sparsely and somewhat strongly punctate than elsewhere; clypeus broadly nearly smooth and sparsely punctate medially: antennae long, 3rd segment longer than wide, and approximately as long as 4th, which is indistinctly shorter than 5th; Cheeks elongate and angulate behind, more than one and one-half times as broad as eyes seen in profile. Mesoscutum tessellate, weakly and sparsely punctate, nearly dull or feebly shiny medially; scutellum broadly nearly smooth or weakly tessellate, sparsely and weakly punctuate; Metasomal terga, especially basal ones, tessellate, becoming smoother toward apical terga, feebly shiny; posterior depressions not sharply indicated.

Remarks: The female is similar to that of *Andrena sakagamii* Tadauchi et al., 1987 from Japan, but is distinguished by the sparser punctate and less tessellated clypeus, the more coarser punctate mesoscutum with dense punctures, the narrower facial foveae and the yellowish caudal fimbria (Xu and Tadauchi, 2012).

Specimens examined: [JELKU] KOREA: 1♀, JJ Pijarim Forests, Pukcheju-gun, 24.iv.1997, O. Tadauchi. JAPAN: Holotype male and allotype female (Kyushu Univ.), Tachibanayama, Fukuoka, Kyushu, Japan, 13−21.iv.1951 (Y. Hirashima). [KEIU] KOREA: 2♀, GG Ganghwa-do Manisan, 30.iv.1995, HS Lee; 1♂, GG Ganghwa-do Manisan, 28.iv.1996, HS Won; 1♀, GG Ganghwa-do Manisan, 13.iv.1996, HS Won; 1♂, GG Gimpo Tongjin-ri, 8.iv.1997, HS Won; 1♂, GG Namhansanseong, 9.iv.1972, SH Lee; 2♀, GG Chukryeongsan, 1.v.1999, HG KIM; 1♀, GG Chukryeongsan, 17.v.1999, JH Kim; 1♀, GG Cheonmasan, 20.v.1958, ??; 3♂, GG Aengmmubong, 14.iv.1974, MJ Moo; 1♂, ditto, 14.iv.1974, OJ Lee; 1♂, ditto, 14.iv.1974, YH Jeong; 1♂, ditto, 9.v.1976, SB Baek; 1♂, ditto, 17.iv.1983, YK Min; 1♂, ditto, 17.iv.1983, MS Kim; 1♂, ditto, 17.iv.1983, KSY; 1♂, ditto, 17.iv.1983, OY Moon; 1♂, ditto, 17.iv.1983, JW Lee; 1♂, ditto, 17.iv.1983, GS Yui; 1♂, ditto, 17.iv.1983, MY Song; 1♂, GG Bogwangsa, 9.v.1976, HY Park; 6♂, ditto, 17.iv.1983, MR Kim; 1♂, ditto, 17.iv.1983, YS Lee; 1♂, ditto, 12.iv.1981, RU Lee; 1♂, ditto, 12.iv.1981, DR Jin; 2♂, ditto, 12.iv.1981, CH Byun; 1♂, GG Aengmmubong, 15.iv.1984, DU Na; 1♂, GG Cheonmasan, 19.v.1983, HJ Lee; 1♂, GG Cheonggyesan, 16.iv.1978, HJ Jeong; 1♂, ditto, 16.iv.1978, HB Kim; 1♂, ditto, 16.iv.1978, HJ Sin; 1♂, ditto, 16.iv.1978, MK Kim; 1♂, ditto, 16.iv.1978, CS Hwang; 1♂, ditto, 16.iv.1978, SB Hong; 2♂, ditto, 16.iv.1978, YH Kim; 1♂, ditto, 16.iv.1978, KU No; 1♂, ditto, 15.iv.1981, YH Lee; 1♂, ditto, 25.iv.1984, JU Lee; 4♂, GG Chukryeongsan, 25.iv.1999, MR Kim; 1♂, ditto, 25.iv.1999, JD Yeo; 1♀, GW Daeamsan, 13.vi.1990, JI Kim; 1♂, CB Yeongwol Baekdansan Gwaneumsa, 12.v.2001, SM Ryu; 14♂, CN Gapsa, 24.iv.1983, MR Kim; 5♂, CN Gapsa, 24.iv.1983, HC Park; 1♀, CN Magoksa, 23.iv.1983, MR Kim; 1♀, CN Seosan Gayasan, 2.v.1997, JD Yeo; 1♂, GB Hwanghaksan, 4.vi.1978, US Lee; 1♂, ditto, SH Lee; 1♂, JB Muju Gucheon-dong, 21.v.1983, JY Choi; 1♂, ditto, 22.v.1983, BK Kim; 1♂, GN Jirisan Hwaeomsa, 3.v.1994, JH Ko. [QIAL] KOREA: 1♀, GN Gunwi, 25.iv.1994, GH SA; 1♀, GB Yecheonjibo, 29.iv.1994, JG Lee; 1♀, GG Suwonningdae, 28.iv.1995, EG Jo; 6♀, GG Suwon, 15.iv.1997, HS Lee; 5♀, GG Suwon, 1.v.1977, GH JO; 1♀, GG Suwon, 4.vi.1982, BS Choi; 1♀, GG Seoul, 19.v.1990, IJ Lee; 1♀, Sumokwon, 24.v.1986, DG Lee; 2♀, GW Yongpyeong, 23.vi.1996, HS Lee; 2♀, Suwonnongdaesumokwon, 15.v.1995, HR Lee; 1♀, GG Gwanggyo, 6.viii.1990, SH Lee; 1♀, Anyangsumokwon, 29.iv.1989, Jun; 2♀, GG Suwo Seodundong, 21.iv.1994, HS Lee; 5♀, GG Suwon Seodundong, 2.v.1994, HS Lee; GG Gwanggyo, 28.iv.1991, HS Lee; GG Suwon Seodundong,

14.iv.1994, HS Lee; 1♀, GG Suwon, 15.iv.1997, HS Lee; 1♀, JJ Miaksan, 14.v.1995, HS Lee; 4♀, GG Gwangju Siheomyangbongjang, 18.iv.1997, HS Lee; 1♀, GG Gwanggyo, 7.iv.1985, DS Kim.

Floral records: *Brassica campestris* L., *Prunus Mume* Sieb. et Zucc., *Salix* sp., *Pyrus simonii*, *Primus americana*.

Distribution: Korea (southern and central, Jeju Is.); Russia (Far East Area), Japan (Honshu, Sado Is., Shikoku, and Kyushu), China (Heilongjiang Prov.).

Region: Eastern Palaearctic.

Korea: GG, GW, CB, CN, GB, GN, JJ.

3. *Andrena* (*Andrena*) *brevihirtiscopa* Hirashima, 1962
(Pl. 1, Female: E; Male: F)
JJal-beun-sol-ae-kkot-beol

Andrena (*Andrena*) *brevihirtiscopa* Hirashima, 1962, 12: 124−127, Type: female, TL: Kyushu, Japan; TD: JELKU [female & male].

Andrena (*Andrena*) *brevihirtiscopa*: Kim & Kim, 1983b: 71 (first Korean record); Tadauchi & Lee, 1992: 48; Kim, 1996: 209; Tadauchi et al., 1997: 200 (in list); Lee & Paik, 2003: 126; Paek et al., 2010: 212; Xu and Tadauchi, 2012, J. Fac. Agr., Kyushu Univ., 57: 98, 99 [China]; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 73 [photos].

Description: Based on the original description by Hirashima (1962) and photos in Tadauchi (2014).

Female. Body length 10−11 mm.

Pubescence: Hairs on body not specially long and dense, hairs on head whitish, mixed with sparse fuscous ones on sides of face, vertex, and cheeks near eyes; facial fovea chocolate. Hairs on thorax pale yellowish brown above, pale below; tibial scopa whitish, scanty. Hairs on anterior margin on 1st and base of 2nd terga long, pale, those of the following terga short, paler, slightly denser on posterior margins, without admixture of darkened ones; caudal fimbria bright, nearly fulvous or slightly brownish.

Structure: Clypeus well convex, densely tessellate, weakly and sparsely punctate except for medio-anterior portion where nearly smooth, shiny, and sparsely punctate; antennae moderately long, 3rd segment indistinctly longer than next two segments together; cheeks slightly broader than eyes seen in profile, tessellate, indistinctly punctate near eyes, feebly shiny. Mesoscutum densely tessellate, with an indication of weak punctures; scutellum tessellate, nearly smooth apically, weakly punctate; propodeal enclosure large, finely sculptured. Legs with mid basitarsi expanded medially, slightly broader than hind basitarsi which are elongate and tapering toward apices. Metasomal terga tessellate and nearly impunctate including posterior depressions, which are broad and sharply indicated.

Male. Body length 8 mm.

Pubescence: Hairs on head, thorax, and 1st metasomal tergum long, not specially dense; those on clypeus dull white, those on the rest of head fuscous. Hairs on thorax pale above and more paler below, mixed with fuscous ones on mesoscutum and scutellum. Hairs on metasoma pale, mixed with brownish ones on 3rd to 5th terga; hairs on 6th tergum bright, yellowish.

Structure: Head large; mandibles long, curved, falciform, with sharp apices; basal projection of mandible rather large, subtriangular; process of labrum short, transverse, not specially roundly convex, smooth and shiny; clypeus scarcely convex, tessellate and densely punctate excepting medio-subapical portion where nearly smooth, broadly impunctate and shiny; antennae moderately long, 3rd segment about or a little less than twice as long as broad, longer than 4th which is less than one and one-half times as long as broad and a little shorter than 5th; cheeks elongate and angulate posteriorly, less than one and one-half times as broad as eyes seen in profile. Mesoscutum densely tessellate, weakly and sparsely punctate; scutellum tessellate, less coarsely sculptured or sometimes nearly smooth subbasally; propodeal enclosure tessellate, rugose basally. Metasomal tergum 1 densely tessellate, 2nd and the following terga less strongly so, becoming much smoother toward apical terga; posterior depressions broad, not sharply indicated.

Remarks: This species is recognized by the hind tibia cuneate with scopal hairs short, the entire labral process in female. It can be separated from *A. mali* Tadauchi et Hirashima, 1987 from Japan by the process of labrum larger and entire, the first flagellar segment longer and the hind tibia cuneate in female (Xu and Tadauchi, 2012).

Specimens examined: [JELKU] KOREA: 2♀1♂, JB Dal Gung, San Nae Meon, Nam Weon Gun, 10.v.1991, O. Tadauchi; 2♀3♂, JN Mt. Nogodan, San Nae Meon, Nam Weon Gun, 10.v.1991, T. Saigusa; 1♀, ditto, 12.v.1991, T. Saigusa; 1♀, JB Sim Won Valley, San Nae Meon, Nam Weon Gun, 13.v.1991, O. Tadauchi; 1♀1♂, ditto, T. Saigusa; 3♀2♂, JB Jeong Lyong Chy, San Nae Meon, Nam Weon Gun, 14.v.1991, T. Saigusa. JAPAN: Holotype female and allotype male (Kyushu Univ.), Mt. Hikosan, Fukuoka, Japan, 4.v.1937 (K. Yasumatsu). [KEIU] KOREA: 2♀, GG Bukhansan Uiryeong, 6.v.1996, JD Yeo; 1♀, GW Daeamsan, 13.vi.1990, JI Kim; SH Nam; 5♀, JB Muju Gucheon-dong, 21.v.1983, MR Kim; 1♀, JB Muju Gucheon-dong, 21.v.1983, EJ Hwang; 1♀, JB Muju Gucheon-dong, 22.v.1983, JS Choi. [QIAL] KOREA: 2♀, GW Yangyang-Gun Hyeonbuk-myeon Eoseonjeon-ri, 25.v.2007, HS Lee; 1♀, GW Odaesan, 25.v.2002, HS Lee; 1♀, GG Suwon, 28.iv.1998, HS Lee; 2♀, JN Nogodan, 25.vi.1997, HS Lee; 2♀, GW Odaesan, 25.v.2002, HS Lee; 2♀, GW Odaesan, 24.v.2002; 2♀, GN Bonghwa-gun Cheongryang-myeon, 29.v.2010; 1♀, GB Mongyeongseje, 26.v.1996, TH Koo; 1♀, CB Goesan-gun Cheongcheon-myeon Sokrosan, 12−13.v.2001, MG Joe.

Floral records: Japan: *Prunus sargentii*, *P. yedoensis*, *Malus pumila*; *Acer* sp..

Distribution: Korea (Central, Southern); Japan (Hokkaido, Honshu, Sado Is., Kyushu); Russia (Far East Area); China (Heilongjiang Prov.).

Region: Eastern Palaearctic.

Korea: GG, GW, JB, JN.

4. *Andrena* (*Andrena*) *hondoica* Hirashima, 1962 (Pl. 2, Female: A; Male: B)
Hon-do-ae-kkot-beol

Andrena (*Andrena*) *hondoica* Hirashima, 1962, J. Fac. Agr., Kyushu Univ., 12: 144−146, Type: male, TL: Honshu, Japan, TD: JELKU [female & male, Japan]; Hirashima, 1966, J. Fac. Agr., Kyushu Univ., 14: 103−104 [female, in key]; Tadauchi et al., 1987, J. Fac. Agr., Kyushu Univ., 31: 37−38; Osytshnjuk, 1995, Key Insects Russian Far East, Vol. IV, Part 1, 516, 522 [female & male, in key]; Tadauchi et al., 1997, Esakia, (37): 200 [in list, Korea]; Gusenleitner and Schwarz, 2002, Entomofauna, 12

(suppl.): 348–349. Xu and Tadauchi, 2012, J. Fac. Agr., Kyushu Univ., 57: 98, 108 [China]; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 75 [photos].

Description: Based on the original description by Hirashima (1962).

Female. Body length 9.5–10.5 mm.

Pubescence: Hairs on face including clypeus dense and long; hairs on clypeus, antennal regions, occiput and cheeks sooty white, those on sides of face, frons, vertex and cheeks near eyes fuscous; facial fovea blackish. Hairs on thorax dense, long, sooty white to slightly yellowish or indistinctly brownish above, grayish white below, not mixed with blackish ones on any portion; tibial scopa silver white in front, broadly brownish posteriorly; tibial scopa composed of moderately long, well arranged, simple hairs. Hairs on metasomal terga much sparser than those on thorax; caudal fimbria brown.

Structure: Clypeus strongly convex, tessellate nearly all over or occasionally narrowly nearly smooth anteriorly, densely punctate; facial quadrangle slightly longer than broad; cheeks slightly broader than eyes seen in profile, receding, narrowly nearly smooth near eyes. Mesoscutum densely tessellate, sparsely and weakly punctate; scutellum nearly as in mesoscutum; propodeal enclosure ill defined, tessellate, distinctly wrinkled basally. Metasomal terga densely tessellate, nearly impunctate, nearly dull or feebly shiny; posterior depressions of terga broad, not sharply indicated.

Male. Body slightly over length 8 mm.

Pubescence: Hairs on clypeus, occiput and cheeks below white, those on sides of face, frons and cheeks near eyes and above or occasionally broadly fuscous. Hairs on thorax long, dense, nearly uniformly dull white or intermixed with black hairs. Hairs on 1st and base of 2nd terga long, those on the rest of 2nd and the following terga shorter, white to grayish, without admixture of blackish hairs.

Structure: Head large; mandibles slender, not specially long, curved, falciform, with sharp apices; basal projections of mandibles small; clypeus nearly flat, feebly shiny, densely punctate all over with punctures small and deep; clypeus shiny, densely punctate all over with punctures small and deep; facial quadrangle indistinctly longer than broad, therefore, head appears distinctly transverse; antennae elongate, 3rd segment less than twice as long as broad, longer than 4th which is a little less than one and one-half times as long as broad, 5th segment a little more than twice as long as broad, subequal to the following segments in length; cheeks elongate and angulate behind, about one and one-half times as broad as eyes seen in profile. Mesoscutum densely tessellate, weakly and sparsely punctate; scutellum nearly as in mesoscutum; propodeual enclosure ill defined, tessellate, distinctly wrinkled basally. Metasomal terga tessellate, nearly impunctate, becoming smoother toward apical terga; posterior depressions of terga broad, not sharply indicated.

Remarks: The female of this species is separable by the head wider than long, the face including clypeus with dense, long, sooty white hairs. It appears early in spring.

Specimens examined: [JELKU] JAPAN: Holotype fmale and allotype female (Kyushu Univ.), Campus, Shinshu Univ., Ina City, Nagano Pref., 3.iv.1961, Y. Maeta. [KEIU] KOREA: 1♀, GG Gwangreung, 19.v.1974, MH Cha; 1♀, GG Ilyeong, 11.iv.1976, SH Nam; 1♀, GG Ilyeong, 11.iv.1976, WD Han; 1♀, GG Aengmubong, 14.iv.1974, DJ Sim; 1♀, GG Aengmubong, 15.iv.1984, MR Kim; 1♂, GG Ganghwa-do Manisan, 2.iv.1995, HS Won; GG Namhansanseong, 9.iv.1972, SH Lee; 1♀, CB Chungju Gyemyeongsan, 18.v.1997, MR Kim.

Floral records: Japan: *Salix Pet-susu* Kimura; *Salix gracilistykz* Miq.; *Salix sachalinensis* Fr. Schm.; *Salix gigiana* Seemen; *Petasites japonicas* subsp. *giganteus* Kitam.; *Veronica didyma* var. *lilacina* Yamaz.

Distribution: Korea (Central, southern); Japan (Hokkaido, Honshu); Russia (Far East Area).
Region: Eastern Palaearctic.
Korea: GG, CB.

5. *Andrena* (*Andrena*) *ishiharai* Hirashima, 1953 (Pl. 2, Female: C; Male: D)
I-shi-ha-ra-ae-kkot-beol

Andrena (*Andrena*) *ishiharai* Hirashima, 1953, Trans. Shikoku Ent. Soc., 3: 133−134, Type: female, TL: Shikoku Japan; TD: JELKU [female, Japan]; Hirashima, 1962, J. Fac. Agr., Kyushu Univ., 12: 132−133 [female & male]; Hirashima, 1966, J. Fac. Agr., Kyushu Univ., 14: 101, 116 [female & male, in key]; Tadauchi et al., 1987, J. Fac. Agr., Kyushu Univ., 31: 23−24; Tadauchi and Lee, 1992, Esakia, (32): 48−49 [Korea]; Tadauchi et al., 1997, Esakia, (37): 200 [in list, Korea]; Osytshnjuk, 1995, Key Insects Russian Far East, Vol. IV, Part 1, 514, 516, 522 [female & male, in key]; Tadauchi et al., 1997, Esakia, (37): 200 [in list, Korea]; Gusenleitner and Schwarz, 2002, Entomofauna, 12 (suppl.): 373−374. Xu and Tadauchi, 2012, J. Fac. Agr., Kyushu Univ., 57: 103−104; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 76 [photos].

Description: Based on the redescription by Hirashima (1962).

Female. Body length less than 12 mm.

Pubescence: Hairs on head long, dense, nearly uniformly black except for dull fulvous ones on occiput. Hairs on thorax long, dense, fulvous above and fuscous below; hairs on legs fuscous or nearly black, including trochanteral ftoccus and tibial scopa, except for femoral floccus which is dull white in front; tibial scopa rather large, compact. Hairs on 1st and 2nd metasomal terga long, those on 3rd and 4th short, pale fulvous; caudal fimbria fuscous; hairs on posterior margins of 2nd to 4th metasomal terga downy, appear to form an obscure hair band.

Structure: Head moderate in size; malar space wide, about one-third times as long as base of mandible; clypeus moderately convex, tessellate all over, densely punctate, with a trace of median, raised line; cheeks broader than eye seen in profile, rather receding. Mesoscutum densely tessellate-punctate; scutellum nearly as in mesoscutum; propodeal enclosure weakly wrinkled basally. Metasomal terga tessellate-punctate, weakly shiny; posterior depressions of terga broad, not well indicated.

Male. Body length 9−10 mm.

Pubescence: Hairs on head long, dense, black on clypeus, sides of face and cheeks, and pale on middle part of clypeus, occiput and cheeks below. Hairs on thorax long, rather dense, pale fulvous, intermixed with fuscous ones on underside of thorax; hairs on legs predominantly pale. Hairs on 1st metasomal tergum and median portion of 2nd long, yellowish; those on 3rd and 4th short, pale and brownish, those on 3th a little longer, predominantly fuscous, those on the following terga nearly bright fulvous medially.

Structure: Head not specially large, slightly broader than thorax seen from above; mandibles not specially long, falciform, with sharp apices, without basal projection; malar space wide, about one third times as long as base of mandible; process of labrum small, deeply notched medially, slightly thickened apically, not roundly convex; clypeus only slightly convex, tessellate all over, densely punctured; antennae elongate, 3rd segment slightly longer than wide, much shorter than 4th which

is twice as long as broad; cheeks elongate and angulate posteriorly, about one and one-half times as broad as eyes seen in profile, rather receding. Mesoscutum densely tessellate, especially so anteriorly, rather sparsely punctate with punctures round and shallow; scutellum nearly as in mesoscutum; propodeal enclosure wrinkled basally. Metasomal terga weakly tessellate, weakly and sparsely punctured, slightly shiny; posterior depressions of 2nd to 4th terga rather broad, not well indicated.

Remarks: This species is similar to *Andrena mikado*. But it is separable by the clypeus much less exceeding line running bases of eyes, and densely tessellate all over. Some differences show between spring and summer forms in male.

Specimens examined. [JELKU] KOREA: 1♂, GN Hamyang Macheon Samjeong-ri, 15.v.1991. O. Tadauchi. JAPAN: Holotype female (Kyushu Univ.), Omogo Valley, Prov. Iyo (=Ehime Pref.), Shikoku, Japan, 11.v.1952, T. Ishihara. [KEIU] KOREA: 1♀, GG Gwangreung, 26.vi.1983, YB Jeong; 1♀, GW Inje Gachilbong, 31.v.1997, MR Kim; 1♂, GW Chiaksan Guryongsa, 29.vii.1975, CW Yun; 1♀, GW Chiaksan Guryongsa, 6.vi.1992, HS Gwak; 1♂, CB Yeongwol Suju Baekdeoksan Gwaneumsa, 12.v.2001, SM Ryu; 1♂, GN Gayasan, 6.viii.1982, ML Kim; 1♀, JB Muju Gucheon-dong, 21.v.1983, MR Kim; 1♀1♂, JB Muju Gucheon-dong, 21.v.1983, JS Choi; 1♀, JB Muju Gucheon-dong, 21.v.1983, HJ Lee; 1♂, JB Muju Gucheon-dong, 21.v.1983, YM Ju; 1♂, JB Muju Gucheon-dong, 21.v.1983, BK Khu; 1♀, GG Gwangreung, 19.v.1974, MH Cha; 1♀, GG Ilyeong, 11.iv.1976, SH Nam; 1♀, GG Ilyeong, 11.iv.1976, WD Han; 1♀, GG Aengmubong, 14.iv.1974, DJ Sim; 1♀, GG Aengmubong, 15.iv.1984, MR Kim; 1♂, GG Ganghwa-do Manisan, 2.iv.1995, HS Won; GG Namhansanseong, 9.iv.1972, SH Lee; 1♀, CB Chungju Gyemyeongsan, 18.v.1997, MR Kim. [SNUE] KOREA: 1♀, GW Chiaksan, 29.vi.1994, HS Lee; 2♀, GG Seoulnongdae, 12.iv.1994, HS Lee; 1♀, GG Ganghwa-do, 2.v.2000, HS Lee; 2♀, GG Gwanggyo, 27.iv.1985, MS Jeon; 1♀, GG Gwanggyo, 27.iv.1985, SJM; 2♀, CB Chilbongsan, 19.iv.1994, JU Kim; 1♀, MS Jeon; 1♀, GG Suwonnongdae, 28.iv.1995, EG Jo; 2♀, GW Odaesan Woljeongsa, 10.v.1996, HS Lee; GG Suwon, 14.vi.1985, KJ Uin; 1♀, GG Gwanggyo, 10.v.1986, JG Lee; 1♀, GG Gwanggyo, 18.iv.1989, YH Ko; 1♀, GG Suwon, 2.v.1994, HS Lee; 1♀, GG Anyang, 12.iv.1994, HS Lee; 1♀, GG Suwon, 15.iv.1997, HS Lee. [QIAL] KOREA: 6♀, CN Seocheon-gun seomyeon-Seoulsiseocheonyeonsuwon, 12.v.2013, HS Lee; 2♀, GG Suwon, 28.iv.1998, HS Lee; 1♀, JJ Eorimok, 22.v.1995, HS Lee; 4♀, GG Gunpo-si Sokdal-dong, 9.v.2010.

Floral records: Japan: 14 plants were listed by Tadauchi et al. (1987) as follows: Spring form: *Taraxacum officinale* Weber, *Petasites japonicus* subsp. *giganteus* Kitam., *Salix hultenii* var. *angustifolia* Kimura, *Salix taraikensis* Kimura, *Salix* sp., *Brassica campestris* L., *Weigela hortensis* Koch. Summer form: *Cimicifuga simplex* Wormsk., *Angelica ursina* Maxim., *Aralia cordata* Thunb., *Aralia elata* Seemann, *Solidago Virga-aurea* L., *Aster glehnii* var. *hondoensis* Kitam., *Polygonum sachalinense* Fr. Schmidt.

Distribution: Korea (central and southern Korea); Japan (Hokkaido, Honshu, Shikoku); Russia (Far East Area).

Region: Eastern Palaearctic.

Korea: GG, GW, CB, JB, GN.

6. *Andrena* (*Andrena*) *kyusani* Kim et Kim, 1989 (Pl. 2, Female: E)
Gyu-san-ae-kkot-beol

Andrena (*Andrena*) *kyusani* Kim et Kim, 1989, Kor. J. Ent., 19: 200 [female, Korea]; Tadauchi et al., 1997, Esakia, (37): 200 [Korea, in list]; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 403 [in list].
Andrena (*Andrena*) *dolharubang* Tadauchi et Xu, 1997, Esakia, (37): 189−190 [female, Korea]. n. syn.

Description:
Female. Body length 11 mm.
Pubescence: Hairs on head moderately long, pale yellowish; those on clypeus rather sparse; those on antennal area denser and longer; those on vertex not mixed with brownish; those on cheeks shorter; facial fovea deep brown. Hairs on mesoscutum dull whitish; those on scutellum dense, pale yellowish posteriorly; propodeal corbicula developed with long, dense dorsal fringes, without internal hairs; tibial scopa more or less loose, composed of long, yellowish hairs. Hairs on metasomal terga sparse; tergum 1 with long, erect, dull whitish hairs; terga 2−4 with obscure, loose, dull white hair fringes, interrupted on tergum 2: caudal fimbria pale brown; sterna 2−5 with subapical fimbriae, yellowish.
Structure: Process of labrum moderate, transverse, not emarginate in the middle; clypeus convex, smooth and shiny, surface with punctures; facial fovea extending a line running between lower margins of antennal fossae; antennae with flagellar segment 1 shorter than 2 plus 3; cheeks broader than eye seen in profile, surface weakly tessellate posteriorly, narrowly shiny near eye. Pronotum with subapical margin emarginate in the middle; mesoscutum and scutellum finely tessellate with punctures, denser posteriorly; propodeal enclosure rugose at basal half, finely tessellate at apical half: dorsal face of propodeum shagreened. Metasomal terga densely tessellate with indistinct, sparse punctures; posterior depressions of terga not well indicated; pygidial plate U-shaped with weak internal triangular area; sterna 2−5 finely tessellate.
Male: Unknown.

Remarks: This species is similar to *Andrena longitibialis* Hirashima, but is differed from it by having the pronotum with subapical margin emarginate in the middle, the tibial scopa yellowish and the clypeus smooth and shiny broadly.
Specimens examined: [JELKU] KOREA: holotype of *dolharubang* Female, Kwangpyong-ri, Namjeju-gun, Cheju Is., Korea, 23.iv.1997, O. Tadauchi. [KEIU] KOREA: 1♂2♀, GG Anamdong, 23.iv.1968, ??; 1♂, GG Jeongreung Seogwangsa, 16.iv.1994, MR Kim; 11♀, GG Cheonggyesan, 22.iv.1984, MR Kim; 1♀, GG Cheonggyesan, 21.iv.1999, GB Bae; 1♀, GG Chonggyesan, 25.iv.1994, Ju Lee; 3♀, GG Bukhansan Uiryeong, 6.v.1996, JD Yeo; 1♀, GG Gangchon, 29.v.1977, YH Park; 1♂, GG Ganghwa Manisan, Heungwang-ri, 15.iv.1995, HS Won; 1♀, GG Ganghwa Manisan, 28.iv.1996, HS Won; 1♂, GG Gwangju, 22.iv.1984, MC Kim; 1♂, GG Cheonggyesan, 16.iv.1978, DH Gu; 1♂, GG Cheonggyesan, 16.iv.1978, CS Oh; 1♂, GG Cheonggyesan, 16.iv.1978, YJ Kim; 1♂, GG Cheonggyesan, 16.iv.1978, HB Kim; 2♀1♂, GG Cheonggyesan, 16.iv.1978, HJ Sin; 1♀, GG Cheonggyesan, 16.iv.1978, JY Park; 1♀, GG Cheonggyesan, 16.iv.1978, ES Kim; 1♀, GG Cheonggyesan, 16.iv.1978, MK Kim; 1♀, GG Cheonggyesan, 16.iv.1978, MR Kim; 1♀, GG Cheonggyesan, 16.v.1986, GU Lee; 1♀, GG Cheonggyesan, 21.iv.1991, YO Jeon; 2♂, GG Namhansanseong, 15.iv.1979, SH Jeong; 1♂, GG Namhansanseong, 15.iv.1979, CS Kim; 1♂, GG Namhansanseong, 15.iv.1979, YJ Cha; 1♂, GG

Namhansanseong, 15.iv.1979, BH Choe; 1♂, GG Namhansanseong, 15.iv.1979, BY Choe; 1♂, GG Namhansanseong, 15.iv.1979, MJ Mon; 1♀, GG Bogwangsa, 12.iv.1980, CH Byun; 1♂, GG Bogwangsa, 23.iv.1980, CH Byun; 1♀, GG Bogwangsa, 23.iv.1980, CH Byun; 1♂, GG Bogwangsa, 9.v.1976, HJ Lee; 1♂, GG Aengmubong, 11.iv.1974, GJ Mun; 1♀, GG Aengmubong, 17.iv.1983, JW Lee; 1♀, GG Aengmubong, 17.iv.1983, DE Lee; 1♀, GG Aengmubong, 15.iv.1984, MR Kim; 1♂, GG Aengmubong, 15.iv.1984, SH Kang; 1♂, GG Aengmubong, 15.iv.1984, SH Jeon; 1♀, GG Aengmubong, 15.iv.1984, GS Choi; 1♀, GG Aengmubong, 15.iv.1984, HN Kim; 1♀, GG Aengmubong, 15.iv.1984, SG Kim; 2♂, GG Wangbangsan, 2.v.1978, WJ Kim; 1♀, GW Gachilbong, 21–23.vi.1984, BH Lee; 16♀, CN Magoksa, 23.iv.1983, MR Kim; 8♀, CN Magoksa, 23.iv.1983, HC Park; 1♀, GB Hwanghaksan, 4.vi.1978, O Jeon; 1♂, GB Hwanghaksan, 3.vi.1978, YS Lee; 1♀, JB Muju Gucheon-dong, 21.v.1983, HJ Lee; 1♂, JB Muju Gucheon-dong, 22.v.1983, HS Park.

Floral records: *Brassica campestris*.

Distribution: Korea (southern and Cheju Is.).

Region: Eastern Palaearctic.

Korea: GG, GW, GB, JB, CN.

7. *Andrena* (*Andrena*) *longitibialis* Hirashima, 1962 (Pl. 3, Female: A; Male: B)
Gin-da-ri-ae-kkot-beol

Andrena (*Andrena*) *longitibialis* Hirashima, 1962: 139–141, Type: female, TL: Honshu, Japan, TD: JELKU [female & male, Japan].

Andrena (*Andrena*) *longitibialis*: Tadauchi & Lee, 1992: 49 (Korea); Kim, 1996: 210; Tadauchi et al., 1997: 200 (in list); Lee & Paik, 2003: 127; Paek et al., 2010: 212; Xu and Tadauchi, 2012: 99, 113; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 79 [photos].

Description: Based on the original description by Hirashima (1962).

Female. Body length 11–12 mm.

Pubescence: Hairs on head and thorax not specially long and dense, pale or pale fulvous and fuscous; hairs on face, occiput and cheeks dull whitish, those on sides of face, frons, vertex, and cheeks near eyes fuscous; facial fovea blackish. Hairs on thorax pale above and whitish below, occasionally mixed with sparse fuscous ones on mesoscutum; tibial scopa silver white in front, brown posteriorly (above); tibial scopa large, loose, composed of long, not well arranged, coarse, simple hairs. Hairs on 1st metasomal tergum long, dull whitish, those on the following terga scanty, short, pale and brownish; caudal fimbria bright, brownish or occasionally yellowish.

Structure: Clypeus strongly convex, tessellate and distinctly punctate over basal half, nearly smooth and sparsely and a little more strongly punctate anteriorly, shiny, with a trace of median, raised, impunctate line; cheeks slightly broader than eyes seen in profile, more or less receding posteriorly. Mesoscutum densely tessellate, somewhat coarsely, more or less densely punctate, occasionally median portion slightly smoother; scutellum nearly as in mesoscutum; propodeal enclosure large, wrinkled nearly basal half, finely tessellate apically; hind basitarsi elongate, scarcely widened subapically, about six times as long as wide near apex. Metasomal terga weakly to distinctly tessellate nearly impunctate; posterior depressions broad, not sharply indicated.

Male. Body length 8 mm.

Pubescence: Hairs on head, thorax and 1st metasomal terga long, not specially dense, pale and fuscous; hairs on face, including clypeus, occiput and cheeks below pale to whitish, those on the rest of head fuscous. Hairs on thorax pale or pale brownish yellow above, whitish below, occasionally intermixed with sparse fuscous ones on mesoscutum. Hairs on metasoma pale, without blackish ones; hairs on 6th terga long, yellowish.

Structure: Head large, much broader than thorax seen from above; mandibles long, curved, falciform, with sharp apices; basal projection of mandible long, narrow; process of labrum short, transversely convex, smooth and shiny; clypeus somewhat distinctly convex longitudinally, narrowly tessellate basally, broadly smooth and sparsely and not strongly punctate; antennae elongate, 3rd segment about twice as long as broad, longer than 4th which is about one and one-half times as long as broad and a little shorter than 5th; cheeks elongate and angulate behind, about one and one-half times as broad as eyes seen in profile. Mesoscutum densely tessellate, sparsely and rather weakly punctate; scutellum nearly as in mesoscutum but smoother subbasally; propodeal enclosure weakly tessellate apically, wrinkled basally. Metasomal terga, especially 1st, weakly tessellate or nearly smooth, shiny, feebly punctate; posterior depressions of terga broad, not sharply indicated.

Remarks: Female of this species is easily distinguished by the slender form, slender hind tibiae, and loose and large tibial scopa which is composed of long, coarse, simple, not well arranged hairs.

Specimens examined: [JELKU] KOREA: 1♀, JB Namwon Sannae-myeon Simwongyegok, 13.v.1991, O. Tadauchi. JAPAN: Holotype female and allotype male (Kyushu Univ.), Nasu, Yumoto, Tochigi Pref., Honshu, Japan, 21.v.1958, R. Ishikawa. [KEIU] KOREA: 1♂2♀, GG Anamdong, 23.iv.1968, ??; 1♂, GG Jeongreung Seogwangsa, 16.iv.1994, MR Kim; 11♀, GG Cheonggyesan, 22.iv.1984, MR Kim; 1♀, GG Cheonggyesan, 21.iv.1999, GB Bae; 1♀, GG Chonggyesan, 25.iv.1994, Ju Lee; 3♀, GG Bukhansan Uiryeong, 6.v.1996, JD Yeo; 1♀, GG Gangchon, 29.v.1977, YH Park; 1♂, GG Ganghwa Manisan, Heungwang-ri, 15.iv.1995, HS Won; 1♀, GG Ganghwa Manisan, 28.iv.1996, HS Won; 1♂, GG Gwangju, 22.iv.1984, MC Kim; 1♂, GG Cheonggyesan, 16.iv.1978, DH Gu; 1♂, GG Cheonggyesan, 16.iv.1978, CS Oh; 1♂, GG Cheonggyesan, 16.iv.1978, YJ Kim; 1♂, GG Cheonggyesan, 16.iv.1978, HB Kim; 2♀1♂, GG Cheonggyesan, 16.iv.1978, HJ Sin; 1♀, GG Cheonggyesan, 16.iv.1978, JY Park; 1♀, GG Cheonggyesan, 16.iv.1978, ES Kim; 1♀, GG Cheonggyesan, 16.iv.1978, MK Kim; 1♀, GG Cheonggyesan, 16.iv.1978, MR Kim; 1♀, GG Cheonggyesan, 16.v.1986, GU Lee; 1♀, GG Cheonggyesan, 21.iv.1991, YO Jeon; 2♂, GG Namhansanseong, 15.iv.1979, SH Jeong; 1♂, GG Namhansanseong, 15.iv.1979, CS Kim; 1♂, GG Namhansanseong, 15.iv.1979, YJ Cha; 1♂, GG Namhansanseong, 15.iv.1979, BH Choe; 1♂, GG Namhansanseong, 15.iv.1979, BY Choe; 1♂, GG Namhansanseong, 15.iv.1979, MJ Mon; 1♀, GG Bogwangsa, 12.iv.1980, CH Byun; 1♂, GG Bogwangsa, 23.iv.1980, CH Byun; 1♀, GG Bogwangsa, 23.iv.1980, CH Byun; 1♂, GG Bogwangsa, 9.v.1976, HJ Lee; 1♂, GG Aengmubong, 11.iv.1974, GJ Mun; 1♀, GG Aengmubong, 17.iv.1983, JW Lee; 1♀, GG Aengmubong, 17.iv.1983, DE Lee; 1♀, GG Aengmubong, 15.iv.1984, MR Kim; 1♂, GG Aengmubong, 15.iv.1984, SH Kang; 1♂, GG Aengmubong, 15.iv.1984, SH Jeon; 1♀, GG Aengmubong, 15.iv.1984, GS Choi; 1♀, GG Aengmubong, 15.iv.1984, HN Kim; 1♀, GG Aengmubong, 15.iv.1984, SG Kim; 2♂, GG Wangbangsan, 2.v.1978, WJ Kim; 1♀, GW Gachilbong, 21–23.vi.1984, BH Lee; 16♀, CN Magoksa, 23.iv.1983, MR Kim; 8♀, CN Magoksa, 23.iv.1983, HC Park; 1♀, GB Hwanghaksan, 4.vi.1978, O Jeon; 1♂, GB Hwanghaksan, 3.vi.1978, YS Lee; 1♀, JB Muju Gucheon-dong, 21.v.1983, HJ Lee; 1♂, JB Muju Gucheon-dong, 22.v.1983, HS Park.

Floral records: Japan: Ikudome (1980) recorded 3 plants and Tadauchi et al. (1987) recorded 14 plants as follows: *Rhododendron reticulatum* D. Don, *Rhododendron metternichii* Sieb. et Zucc., *Rhododendron kiusianum* Makino, *Rhododendron macrosepalum* Maxim., *Rhododendron* sp., *Enkianthus peru-*

latus Schneid., *Salix yoshinoi* Koidz., *Prunus persica* Batsch., *Brassica campestris* L., *Capsella Bursa-pastoris* Medic., *Lamium album* var. *barbatum* Franch. et Savat., *Ajuga decumbens* Thunb., *Chrysanthemum leucanthemum* L., *Philadelphus satsumi* Sieb..

Distribution: Korea (southern Korea); Japan (Hokkaido, Rishiri Is., Honshu, Sado Is., Shikoku, Kyushu).

Region: Eastern Palaearctic.

Korea: GG, GW, CN, JB.

8. *Andrena* (*Andrena*) *mikado* Strand et Yasumatsu, 1938
(Pl. 3, Female: C; Male: D)
Mi-ka-do-ae-kkot-beol

Andrena (*Melandrena*) *mikado* Strand et Yasumatsu, 1938, 11: 67−69, Type: female, TL: Kyushu, Japan, TD: JELKU [female, Japan].

Andrena mikado Yasumatsu, 1941, Peking nat. Hist. Bull., 15: 278 [in list]; Kim, 1970, Ill. Fauna & Flora Korea, 11(3): 660, 824.

Andrena (*Andrena*) *mikado* Hirashima, 1962, J. Fac. Agr., Kyushu Univ., 12: 127 [female & male]; Hirashima, 1966, J. Fac. Agr., Kyushu Univ., 14: 101, 116 [female & male, in key]. Tadauchi et al., 1987, J. Fac. Agr., Kyushu Univ., 31: 12, 16, 20−22; Tadauchi and Lee, 1992, Esakia, (32): 48 [Korea]; Tadauchi et al., 1997, Esakia, (37): 200 [in list, Korea]; Gusenleitner and Schwarz, 2002, Entomofauna, 12 (suppl.): 479−480; Xu and Tadauchi, 2012, J. Fac. Agr., Kyushu Univ., 57: 98, 99−100; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 82 [photos].

Description: Based on the original description by Hirashima (1962).

Female. Body length 13−15 mm.

Pubescence: Hairs vary greatly in color; in a typical form, hairs on 4th and 5th or 3rd to 5th mtasomal terga nearly uniformly fulvous while those on the rest of body all deep black; in forma A, hairs on head black and pale fulvous, those on thorax and metasoma fulvous, and those on legs black; in forma B, hairs on scutellum, metathorax and metasomal terga nearly uniformly fulvous while those on the rest of body black. Hairs on body, especially on thorax and all exposed metasomal terga, long and dense; tibial scopa large, composed of somewhat loose, coarse and simple hairs.

Structure: Mandibles long and stout; malar space broad, approximately one-half as long as base of mandible; clypeus well convex, elongate, much exceeding line running bases of eyes; clypeus densely punctate tessellate basally, smooth and sparsely punctured apically, with a trace of median, raised, impunctate line; antennae long, with 3rd segment indistinctly longer than 4th and 5th combined, 4th and the following segments longer than broad, respectively; cheeks slightly broader than eyes seen in profile. Mesoscutum densely tessellate-punctate; mesoscutum nearly as in mesoscutum; propodeal enclosure wrinkled at basal half. Metasomal terga tessellate-punctate, weakly shiny; posterior depression of 2nd to 4th terga broad, not sharply indicated.

Male. Body length 10−11 mm.

Pubescence: Hairs on body either dull gray or black, much sparser than in female; hairs on clypeus, occiput, and cheeks below, thorax, basal two metasomal terga, coxae, trochanters, and femora

long dull white; hairs on sides of face, cheeks above and near eyes, lateral base of propodeum long and black; hairs on 3rd to 5th metasomal terga much shorter than preceding terga, slightly yellowish, intermixed with blackish ones; hairs on 6th metasomal tergum long and yellowish.

Structure: Head large, much broader than thorax; mandibles long, curved, falciform, with sharp apices; basal projections of mandibles large, not sharply pointed at apices, malar space elongate, about one-half as long as base of mandible, smooth and shiny; process of labrum large, roundly convex, shiny; clypeus weakly convex, nearly flat and sparsely punctate apically, elongate and much exceeding line running bases of eyes; antennae long, with 3rd segment more than twice as long as broad, longer than 4th which is a little less than twice as long as broad, 4th and the following segments slightly convex anteriorly; cheeks elongate posteriorly, about twice as broad as eyes seen in profile, distinctly angulate behind. Mesoscutum densely tessellate, sparsely and indistinctly punctate; scutellum nearly as in mesoscutum; propodeal enclosure sculptured nearly as in female. Metasomal terga tessellate, weakly and sparsely punctate; posterior marins of terga nearly smooth and shiny.

Remarks: It is the largest species in the Korean *Andrena*. The female shows color variation on hairs of the body. Although *Andrena* nawai shows cline on the hair color of the body in Japan, but this species does not present clinal color variation, but that within population in the same area.

Specimens examined: [JELKU] KOREA: 1 female and 1♂, Dal Gung, San Nae Meon, Nam Weon Gun, JB, 10.v.1991 (O. Tadauchi); 1♂, Sam Jeong Li, Ma Cheong Meon, Hamyang Gun, GN, 11.v.1991 (O. Tadauchi); 3♀, Sim Won Valley, San Nae Meon, Nam Weon Gun, JB, 13.v.1991 (O. Tadauchi); 6♀1♂, Sam Jeong Li, Ma Cheong Meon, Hamyang Gun, GN, 15.v.1991 (O. Tadauchi); 2♂, Sam Jeong Li, Ma Cheong Meon, Hamyang Gun, GN, 15.v.1991, T. Saigusa. JAPAN: Holotype female (Kyushu Univ.), Sangunsan, Fukuoka Pref., Kyushu, Japan, 18.iv.1934 (K. Yasumatsu). [KEIU] KOREA: 1♀, GG Dobongsan, 24.vi.1983, KYH; 2♀, GG Jeongreung, 27.iv.1981, SH Nam; 1♀, GG Seochogu Choeonggyesan, 3.v.2000, HJ Ju; 10♀6♂; 1♀, GG Bukhansan, 27.v.1997, HJ Mon; GG Bukhansan Uiryeong, 6.v.1996. JD Yeo; 1♀, GG Goryeongsan, 21.vi.1997, JY Son; 1♀, GG Eumhyeon-ri, 2.vi.1991, JYP; 1♂, GG Cheonggyesan, 21.iv.1971, YH Lee; 1♂, GG Cheonggyesan, 21.iv.1971, JW Lee; 1♂, GG Cheonggyesan, 16.iv.1978, DH Gu; 1♀, GG Cheonggyesan, 16.iv.1978, JJ Lee; 1♀, GG Cheonggyesan, 16.iv.1978, CS Oh; 1♀, GG Cheonggyesan, 16.iv.1978, JS Kim; 1♂, GG Cheonggyesan, 19.iv.1986, JE Lee; 1♂, GG Cheonggyesan, 19.iv.1987, SY Oh; 1♂, GG Cheonggyesan, 19.iv.1987, JI Lee; 1♀, GG Cheonggyesan, 24.iv.1987, JG Sin; 1♂, GG Cheonggyesan, 10.v.1987, DH Lee; 1♀, GG Cheonggyesan, 5.iv.1988, HG Kim; 1♀, GG Cheonggyesan, 24.iv.1988, BU Min; 1♂, GG Cheonggyesan, 21.iv.1991, JH Lee; 1♂, GG Cheonggyesan, 21.iv.1991, KYH; 1♀, GG Cheonggyesan, 10.iv.1994, SY Kim; 1♀, GG Cheonggyesan, 21.iv.1991, YP Jeon; 1♀, GG Cheonggyesan, 21.iv.1991, HKC; 2♀, GG Cheonggyesan, 1.v.1993, PKY; 2♀, GG Cheonggyesan, 17.v.1993, CMI; 1♂, GG Cheonggyesan, 10.iv.1994, TY Kim; 1♀, GG Bogwangsa, 17.vi.1983, JS Cheo; 1♀, GG Aengmubong, 17.iv.1983, JH Han; 1♂, GG Aengmubong, 17.iv.1983, JY Choi; 1♀, GG Aengmubong, 17.iv.1983, YM Go; 1♀, GG Aengmubong, 17.iv.1983, JY Park; 1♀, GG Aengmubong, 17.iv.1983, YN Jo; 1♀, GG Aengmubong, 17.iv.1983, HS Jung; 1♀, GG Aengmubong, 17.iv.1983, HS Park; 1♀, GG Aengmubong, 17.iv.1983, TH No; 1♀, GG Aengmubong, 17.iv.1983, GS Yui; 1♀, GG Aengmubong, 14.iv.1974, JE Gu; 1♀, GG Aengmubong, 14.iv.1974, YM An; 1♀, GG Aengmubong, 14.iv.1974, YS Pyo; 1♀, GG Aengmubong, 14.iv.1974, SH Nam; 1♀, GG Aengmubong, 14.iv.1974, PSH; 1♀, GG Aengmubong, 14.iv.1974, HB Lee; 1♀, GG Aengmubong, 14.iv.1974, MH Yang; 1♀, GG Aengmubong, 14.iv.1974, GJ Mun; 1♀, GG Aengmubong, 14.iv.1974, OJ Lee; 1♀, GG Aengmubong, 14.iv.1974, GS Son; 1♂, GG Aengmubong, 5.iv.1994, KJ Lee; 1♂, GG Aengmubong, 5.iv.1994,

YI Jo; 1♀, GG Namhansanseong, 4.v.1989, LSS; 1♂, GG Namhansanseong, 15.iv.1979, SH Jeong; 1♀, GG Namhansanseong, 15.iv.1979, BC Mon; 1♀, GG Namhansanseong, 15.iv.1979, SE Kim; 1♀, GG Namhansanseong, 15.iv.1979, OB Kwon; 1♀, GG Namhansanseong, 15.iv.1979, IY Lee; 1♀, GG Namhansanseong, 15.iv.1979, SJ Lee; 1♀, GG Ilyeing, 15.vi.1988, Dokgo; 1♀1♂, GG Chukryeongsan, 1.v.1999, YC Park; 3♀, GG Pocheon Baekunsan, 10.v.1997, MH Lee; 2♀, GG Pocheon Backunsan, 10.v.1997, HJ Mon; 1♀, GG Pocheon Backnsan, 10.v.1997, NH Kim; 1♀, GG Pocheon Backnsan, 10.v.1997, MJ Kim; 2♀, GG Pocheon Backnsan, 10.v.1997, JY Lee; 1♀, GG Cheonmasan, 11.vi.1981, YH Shin; 1♀, GG Cheonmasan, 12.v.1983, OJ Um; 1♂, GG Cheonmasan, 19.iv.1987, SM Baek; 1♂, GG Cheonmasan, 19.iv.1987, JS Kim; 1♀, GG Cheonmasan, 19.iv.1987, SY Lee; 1♀, GG Yongmunsan, 4.v.1977, SH Yeon; 1♀, GG Cheonmasan, 8.v.1998, SH JO; 1♀, GW Seolaksan, 24.v.1965, JI Kim; 1♀, GW Sokcho Seolak-dong Biseondae, 19.v.2001, JG Kim; 1♀, GW Woljeongsa Gyegok, 30.iv.1978, JH Kim; 3♀, GW Hyangrobong, 29.v.1968, JI Kim; 1♀, GW Hyangrobong, 28.v.1968, JG Oh; 1♀, CB Sobaeksan, 5.vi.1981, SH Nam; 2♀, CB Sobaeksan, 6.vi.1981, YH Jin; 2♀, CB Sobaeksan, 6.vi.1981, CK Kim; 3♀, CB Sobaeksan, 6.vi.1981, IY Choi; 1♀, CB Sobaeksan, 6.vi.1981, OS Kim; 2♀, CB Sobaeksan, 6.vi.1981, JH Gwak; 2♀, CB Sobaeksan, 6.vi.1981, BY Lee; 1♀, CB Sobaeksan, 6.vi.1981, CS Lee; 1♀, CB Sobaeksan, 6.vi.1981, HM Kim; 2♀, CB Sobaeksan, 6.vi.1981, SN Kim; 2♀, CB Sobaeksan, 6.vi.1981, JI Jeong;♀, CB Sobaeksan, 6.vi.1981, YS Shin; 1♀, CB Sobaeksan Huibongsan, 6.vi.1981, YW Lee; 1♀, CB Yeongwol Sujumyeon Baekdeoksan Gwaneumsa, 12.v.2001, SM Lyu; 1♀, CN Gyeryongmyeon, 5−7.vi.1997, YG Lim; 1♀2♂, GB YeongJu Punggi Sanga-ri Sobaeksan Birosa, 5.v.1999, SM Lyu; 1♀, GB Hwanghaksan, 4.vi.1978, EH Kim; 1♀, JB Muju Gucheon-dong, 21.v.1983, MR Kim; 1♀, JB Muju Gucheon-dong, 22.v.1983, JS Choi; 1♀, JB Muju Gucheon-dong, 23.v.1993, EG Namgung; 1♀, JN Jogyesan, 22.v.1988, DG Kim; 1♀, JN Baekunsan, 20.v.1991, KYH. [SNUE] KOREA: 1♀, GG Anyang, 8.v.1990, KU Chon; 1♀, GG Anyang, 31.v.1987, SWS; 1♀, GG Anyang, 23.v.1987, SS An; 5♀, GG Anyang, 8.v.1990, SM Jeng; 1♀, GG Anyang, 25.v.1986, JG Lee.

Floral records: Japan: 7 palnts were recorded by Tadauchi et al. (1987) as follows: *Pieris japonica* D. Don, *Rhododendron pentaphyllum* Maxim., *Rhododendron metternichii* Sieb. et Zucc., *Rhododendron* sp., *Enkianthus perulatus* Schneid., *Taraxacum japonicum* Koidz., *Salix* sp..

Distribution: Korea (southern Korea); Japan (Honshu, Shikoku, Kyushu, Tsushima Is., Yakushima Is.).

Region: Eastern Palaearctic.

Korea: GG, GB, JB, GN, JN, CB.

9. *Andrena* (*Andrena*) *sakagamii* Tadauchi, Hirashima et Matsumura, 1987 (Pl. 3, Female: E)

Sa-ka-ga-mi-ae-kkot-beol

Andrena (*Andrena*) *sakagamii* Tadauchi, Hirashima et Matsumura, 1987, J. Fac. Agr., Kyushu Univ., 31: 13, 29−32, Type: female, TL: Hokkaido, Japan, TD: JELKU [female & male, Japan]; Tadauchi and Lee, 1992, Esakia, (32): 49 [Korea]; Osytshnjuk, 1995, Key Insects Russian Far East, Vol. IV, Part 1, 516, 522 [female & male, in key]; Tadauchi et al., 1997, Esakia, (37): 200 [in list, Korea]; Gusenleitner and Schwarz, 2002, Entomofauna, 12 (suppl.): 657; Xu and Tadauchi, 2012, J. Fac. Agr., Kyushu Univ., 57: 98, 100; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 84 [photos].

Description: Based on the original description by Tadauchi et al. (1987).

Female. Body length 8.5−9.5 mm.

Pubescence: Hairs on head and thorax short, not dense, those on head whitish, those on cheeks near eye and vertex brownish; facial fovea chocolate above, paler below; facial fovea with upper end occupying $^3/_4$ space between eye and post ocellus (nearly full space in *benefica*). Hairs on thorax whitish to fulvous above, whitish below; tibial scopa white, slightly brownish above, composed of well arranged hairs, which are longer than those in *benefica*. Hairs on metasomal terga scanty, white; caudal fimbria golden (yellowish brown in *benefica*); posterior margins of metasomal terga 2−4 each with an apical, obscure fringe of white hairs.

Structure: Process of labrum transverse; malar space about $^1/_4$ times as long as base of mandible; clypeus well convex, with basal half tessellate and apical half slightly tessellate, sparsely punctate with punctures irregular in size and distribution; clypeus with a median, impunctate space distinct even on apical area (apical portion of clypeus broadly impunctate in *benefica*). Mesoscutum and scutellum weakly tessellate and weakly shiny with a little roughened, very close punctures (densely tessellate with sparse punctures in *benefica*); propodeal enclosure weakly rugose basally, densely tessellate apically. Metasomal terga densely tessellate, nearly impunctate; posterior depressions of terga broad, not well indicated.

Male. Body length 8−9 mm.

Pubescence: Hairs on head pale yellowish to fulvous; those on clypeus relatively dense, long; those on paraocular area, frons and cheeks near eye and vertex mixed with sparse, brownish hairs. Hairs on thorax pale yellowish to fulvous above, paler below; those on legs pale yellowish. Hairs on metasomal tergum 1 long, pale yellowish, terga 2−5 short, tergum 6 golden; metasomal sterna 2−5 each with a long, curled fringe of fulvous hairs apically.

Structure: Mandible long, curved, without a basal projection; malar space very narrow, about $^1/_6$ times as long as base of mandible; process of labrum small, smooth and shiny; clypeus nearly flat, tessellate on basal $^1/_6$, and shiny and smooth apically with distinct punctures all over; cheeks distinctly angled behind; flagellum 1 one and half times as long as wide, longer than 2, and slightly longer than 3. Mmesoscutum weakly tessellate with sparse, shallow punctures; scutellum very weakly tessellate, sparsely punctate anteriorly and densely punctate posteriorly; propodeal enclosure rugose on basal $^1/_4$, tessellate apically. Metasomal terga weakly tessellate, becoming smoother toward apical terga; posterior depressions of terga broad, indistinct.

Remarks: It is similar to *Andrena benefica* Hirashima, but is separable by the mesoscutum more roughened with closer punctures, the clypeus slightly tessellate and sparsely punctate apically, It primarily associates with *Taraxacum*.

Specimens examined: [JELKU] KOREA: 2♂, GN Hamyang Macheonmyeon Samjeong-ri, 9.v.1991, T. Saigusa; 1♂, GN Hamyang Macheonmyeon Samjeong-ri, 11.v.1991, T. Saigusa; 1♀, JB Namwon Sannaemyeon Simwongyegok, 13.v.1991, O. Tadauchi; 3♀, JB Namwon Sannaemyeon Jeongryeongchi, 14.v.1991, O. Tadauchi; 1♀1♂, GN Hamyang Macheonmyeon Samjeong-ri, 15.v.1991, T. Tadauchi; 2♂, GN Hamyang Macheonmyeon Samjeong-ri, 15.v.1991, T. Saigusa. JAPAN: Holotype female (Type No. 2572, Kyushu Univ.), Yamada Spa, Niseko, Hokkaido, Japan, 20.v.1984, O. Tadauchi.

Floral records: Japan: 10 plants were recorded by Tadauchi et al. (1987) as follows: *Taraxacum officinale* Weber, *Bellis perennis* L., *Prunus sargentii* Rehd., *Salix* sp., *Erythronium japonicum* Decne, *Rhododendron* sp., *Weigela hortensis* Koch, *Aralia elata* Seemann, *Staphylea bumalda* DC., *Viola verecunda* A. Gray.

Distribution: Korea (southern Korea); Japan (Hokkaido, Okushiri Is., north Honshu); Russia (Far East area).
Region: Eastern Palaearctic.
Korea: GN, JB.

Subgenus *Calomelissa* Hirashima et LaBerge, 1963

Calomelissa Hirashima et LaBerge, 1963: 241. TS: *Andrena prostomias* Perez, 1905, by original designation.

10. *Andrena* (*Calomelissa*) *prostomias* Pérez, 1905 (Pl. 4, Female: A; Male: B)
Keun-bak-ha-ae-kkot-beol

Andrena prostomias Pérez, 1905: 34. Type: female; TL: Japan; TD: MNHN.
Andrena prostomias: Cockerell, 1913: 189 [female]; Yasumatsu, 1941: 279.
Andrena (*Calomelissa*) *prostomas*: Hirashima, 1963: 242−245 [female & male]; Hirashima, 1966: 111, 113 [female & male, in key]; Xu and Tadauchi, 1995: 622−623; Tadauchi et al., 1997: 200 [in list, Korea]; Tadauchi, 2014: 87 [photos].

Description: Based on the redescription by Hirashima (1963).
Female. Body length 12−13 mm.
Pubescence: Hairs on head short, sparse on clypeus, brownish except for paler hairs on antennal regions and occiput; facial fovea chocolate, paler below. Hairs on mesoscutum short, dense, fuscous; those on scutellum short, fuscous, longer and paler posteriorly; dorsal fringe of propodeal corbicula scanty, composed of short, not well arranged, white hairs; tibial scopa well developed, composed of dense, well arranged, simple hairs: tibial scopa silvery white, narrowly and slightly brownish above basally. Metasomal tergum 1 almost bare; hairs on 2nd and the following terga brownish; caudal fimbria fuscous; posterior margins of 2nd tergum with lateral, that of 4th with nearly complete fringes of white hairs.
Structure: Head large, nearly quadrate in front view; clypeus convex above, scarcely or very slightly so subapically, reflected at apex, smooth, strongly shiny, scattered with distinct punctures; facial fovea very large, with upper end occupying full space between orbits and post ocelli; vertex weakly tessellate, weakly and not densely punctate; cheeks well developed, more than one and one-half times as broad as eyes seen in profile. Mesoscutum broadly weakly tessellate or sometimes nearly smooth medially, slightly shiny, weakly and sparsely punctate; dorsal face of propodeum scarcely roughened, densely tessellate with an indication of very weak, dense punctures; propodeal enclosure large with lateral margins convex outwardly, interior more or less roundly concave medially, coarsely rugose basally, densely tessellate apically; mesopleuron hardly roughened, tessellate, sparsely and more or less weakly punctate. Metasomal tergum 1 smooth, strongly shiny, scattered with microscopical fine punctures; posterior depressions of terga broad, not sharply indicated.

Male. Body length 10−11 mm.

Color: Black; clypeus broadly and longitudinally yellow medially.

Pubescence: Hairs on head sparse, rather short (on clypeus) to more or less long (on sides of face and vertex), nearly brown except for paler hairs on antennal regions, occiput and cheeks below. Hairs on thorax not specially dense, more or less short above; those on mesoscutum and scutellum predominantly brown, those on metanotum, propodeum and mesopleuron whitish to white. Metasomal terga scanty of hairs; hairs on 2nd and the following terga brownish; hairs on 5th and 6th terga nearly brown; posterior margins of 2nd to 4th terga with lateral fringes of short, sparse, white hairs.

Structure: Head large, but not distinctly broader than thorax seen from above; process of labrum small, protuberant; clypeus very slightly convex, reflected at apex, smooth, strongly shiny, scattered with distinct punctures; antennae with 3rd segment a little more than one and one-half times as long as broad, 4th segment a little broader than long, 5th and the following segments indistinctly longer than broad, respectively; vertex shiny, somewhat coarsely punctate; cheeks well developed, much broader than eyes. Mesoscutum narrowly shagreened anteriorly, nearly smooth medially, sparsely and weakly punctate; scutellum well convex, nearly smooth with weak punctures; propodeum and mesopleuron sculptured quite as in female, not at all more roughened than in female. Metasomal terga smooth or nearly so, shiny; 1st tergum with sparse, 2nd and the following terga with more dense, very weak punctures; posterior depressions of 2nd to 5th terga more or less broad, not well indicated.

Remarks: Closely related species, *Andrena pieli*, occurs in China. It is distinguished by the clypeus hardly convex, polished, scattered with distinct punctures. Cheeks much broader than eyes. Mesoscutum nearly smooth, weakly punctate. It is a narrowly oligolectic species associated with *Deutzia* in Saxifragaceae.

Specimens examined: Not examined.

Floral records: Japan: *Deutzia crenata* Sieb. et Zucc.; *Deutzia sieboldiana* Maxim.

Distribution: Korea (??); Japan (Honshu, Shikoku, Kyushu); Russia (Far East area).

Region: Eastern Palaearctic.

Korea: Unknown.

Remarks: This species is similar to *Andrena tsukubana*, but can be separated by the larger size, the clypeus convex. We could not confirm any speciemens from Korea.

11. *Andrena* (*Calomelissa*) *tsukubana* Hirashima, 1957
(Pl. 4, Female: A; Male: B)
Bak-ha-ae-kkot-beol

Andrena tsukubana Hirashima, 1957: 55−56, Type: female; TL: Kyushu, Japan; TD: JELKU [female & male].

Andrena (*Calomelissa*) *tsukubana*: Kim & Kim, 1983a: 6 (first Korean record); ESK & KSAE, 1994: 266; Kim, 1996: 210 (Korea); Tadauchi et al., 1997: 200 (in list); Lee & Paik, 2003: 127; Paek et al., 2010: 212; Tadauchi, 2014: 88 [photos].

Description: Based on the description and redescription by Hirashima (1957, 1963).

Female. Body length 11 mm.

Pubescence: Hairs on body rather uniformly scanty and short, blackish on vertex, mesoscutum and scutellum, brownish on face, whitish on cheeks, mesopleuron and propodeum; tibial scopa creamy white, brown above basally; tibial scopa composed of long dense hairs. Metasomal terga 2nd to 4th with narrow, broadly interrupted white hair bands; caudal fimbria dark brown.

Structure: Head rather small, narrower than thorax seen from above; process of labrum large, transverse, apex entire; clypeus well convex, nearly smooth, shiny, scattered with coarse punctures; antennae with 3rd segment a little longer than 4th plus 5th which are broader than long, respectively; facial fovea with upper end occupying full space between orbits and post ocelli, obliquely narrowing downwards; cheeks about as broad as eyes seen in profile. Mesoscutum densely tessellate anteriorly, weakly so posteriorly, weakly shiny, weakly and sparsely punctate; scutellum slightly convex, smoother and a little more densely punctate than in mesoscutum; propodeal enclosure large with lateral margins convex outwardly, densely rugose; lateral face of propodeum finely tessellate; mesopleuron scarcely roughened, weakly tessellate, weakly shiny, weakly and sparsely punctate. Metasoma broad, shiny; 1st tergum smooth, impunctate basally, sparsely and very weakly punctate elsewhere; 2nd tergum very weakly tessellate basally, the rest of tergum nearly smooth, very weakly and distinctly more densely punctate than in 1st; 3rd and 4th terga very weakly tessellate, punctate nearly as in 2nd; posterior depressions of 2nd to 4th more or less well indicated, sparsely and very weakly punctate.

Male. Body length 10 mm.

Color: Black; clypeus with a large pale yellow patch or nearly all space pale yellow.

Pubescence: Hairs on face, clypeus, vertex and upper parts of cheeks black. Mesoscutum with sparse, black hairs. Metasomal hair patches sparse.

Structure: Head rather small, slightly narrower than thorax seen from above; process of labrum transverse, convex apically; clypeus rather well convex, smooth, shiny, scattered with distinct punctures; antennae long, with 3rd segment twice as long as broad, 4th indistinctly broader than long, 5th and the following segments slightly longer than wide; cheeks about as broad as eyes seen in profile, convex above, receding below. Mesoscutum densely tessellate anteriorly, nearly smooth and much more shiny posteriorly, weakly and sparsely punctate; propodeum and mesopleuron scarcely roughened, about as coarsely sculptured as in female; enclosure of propodeum nearly as in female or with rugae a little weaker. Metasoma elongate, smooth or nearly so, shiny; 1st tergum sparsely, 2nd and the following terga more densely punctate; posterior depressions of terga narrow, more or less well indicated.

Remarks: This species is similar to *Andrena prostomias* Pérez, but can be separated by the smaller size, the clypeus normally convex. It is associated with *Deutzia crenata*. It is a narrowly oligolectic species associated with *Deutzia* in Saxifragaceae.

Specimens examined: [JELKU] JAPAN: Holotype male (Kyushu Univ.), Minamihata Prov., Chikuzen (=Fukuoka Pref.), Japan, 5.vi.1949, Y. Hirashima. [KEIU] KOREA: 1♀, GG Cheonggyesan, 5.vi.1974, WH An; 1♀, GG Wangbangsan, 5.vi.1977, YE Kwon; 1♀, GG Yangju Bogwangsa, 29.vi.1975, SI Oh; 1♀, GG Yangju Bogwangsa, 6.vi.1978, JY Park; 1♀, GG Yangju Bogwangsa, 9.vi.1987, HG Maeng; 1♀, GG Yangju Bogwangsa, 18.vi.1977, YH Kim; 1♂, GG Soyosan, 6.vi.1974, MH Yang; 1♀, GG Soyosan, 28.v.1977, GA Kim; 1♂, GG Cheonmasan, 29.v.1982, SJ Kim; 1♂, GG Cheonmasan, 11.v.1973, YJ Yeong; 2♂, GG Gapyeong, 30.v.1998, MR Kim; 1♂, GG Gapyeong, 30.v.1998, JD Yeo; 1♀, GW Chiaksan Geundae-ri, 6.vi.1974, IH Lee; 1♀, GW Chiaksan Geun-

dae-ri, 6.vi.1974, HY Kang; 1♀, GW Seolaksan Baekdamsa, 5.vi.1979, GM Kim; 1♀, GW Gangchon, 22.v.1977, YE Kwon; 1♀, GW Gangchon, 22.v.1977, HU Lee; 1♀, GW Gangchon, 22.v.1977, B Jeong; 1♀, GW Gangchon, 22.v.1977, ES Oh; 1♀2♂, GW Gangchon, 22.v.1977, HY Mon; 1♀1♂, GW Gangchon, 22.v.1977, GO Lee; 1♀1♂, GW Gangchon, 22.v.1977, HJ Lee; 3♂, GW Gangchon, 22.v.1977, SS Park; 1♂, GW Gangchon, 22.v.1977, SJ Oh; 1♂, GW Gangchon, 22.v.1977, SH Park; 1♂, GW Gangchon, 22.v.1977, HY Han; 1♀, GW Gangchon, 22.v.1977, YS Yeon; 1♀, GW Gangchon, 22.v.1977, SB Yoon; 1♀, GW Gangchon, 22.v.1977, IS Yeo; 1♀, GW Gangchon, 22.v.1977, HG Lee; 2♀, GW Gangchon, 22.v.1977, SJ Jeong; 1♀, GW Gangchon, 22.v.1977, BG Jeong; 1♀, GW Gangchon, 22.v.1977, ES Oh; 1♀1♂, GW Gangchon, 22.v.1977, JH Yoo; 2♀, GW Gangchon, 22.v.1977, YR Park; 1♀, GW Pyeongchang Hoeryeongbong Chaun-ri, 22.v.1998, MR Kim; 2♂, GW Gyebangsan, 6.vi.1983, MR Kim; 2♀, GW Yanggu Dosolgsan, 13.vi.1990, UJ Lee; 1♀, GW Yanggu Haeanman, 13.vi.1990, JI Kim; 2♀, CB Sobaeksan Huibangsa, 7.vi.1974, JH Park; 1♀, CB Sobaeksan Huibangsa, 7.vi.1974, BJ Lee; 1♀, CB Sobaeksan Huibangsa, 7.vi.1974, SH Nam; 1♀, CB Sobaeksan, 6.vi.1981, DS Kim; 1♀, CN Gyeruongsan Gapsa, 26.v.1974, JH Sin; 1♀, CN Gyeruongsan Gapsa, 26.v.1974, BG Lee; 1♀, GG Gwangreung, 28.v.1972, DY Yoo; 1♀, GW Hongcheon Balgyosan, 6.vi.1998, JK Kim; 1♀, GW Hongcheon Balgyosan, 6.vi.1998, JD Yeo; 1♀, GW Hongcheon Balgyosan, 6.vi.1998, MR Kim; 1♀, JN Duryunsan, 28.v.1993, JG Kim; 1♀, GG Cheonmasan, 26.vi.1984, HJ Lee; 1♀, GB Hwanghaksan, 4.vi.1978, CS Han; 1♀, CB Chungju Gyemyeongsan, 18.v.1997, MR Kim; 1♀3♂, GW Hwacheon Hwaaksan, 30.v.1998, MR Kim; 1♀, GW Pyeongchang Odaesan, 27.v.1998, SM Lyu; 1♀, GW Jeongseon Gariwangsan, 28.v.1998, SM Lyu; 1♀, JN Hwaeomsa, 6.vi.1974, GS Son; 1♂, GG Gapyeong, 30.v.1998, JD Yeo; 2♂, GG Gapyeong, 30.v.1998, MR Kim. [SNUE] KOREA: 1♀, GG Nongdaesumokwon, 26.v.1996, MS Choi. [QIAL] KOREA: 1♀, GG Suwon, 30.v.1994, HS Lee; 1♀, CB Goesan Hoeyangri, 25.v.1996, SE JO; 1♀, GG Cheongpyeong, 20.v.1999, JG Lee; 1♀, CB Boeun, 3.vi.2001, JH Kim; 1♀, GG Cheongpyeong, 26.v.1995, JH Yoo; 1♀, GW Pyeongcheong-Gun Odaesan Bukdaesa, 13.vi.2010, HS Lee; 2♀, GN Jirisan Cheoneunsa, 27.v.1997, HS Lee; 1♀, JN Nogodan, 26.v.1997, HS Lee; 1♀, JN Jirisan Simwon, 5.vi.1996, HS Lee; 1♀, GB Yeongyang-gun Subimyeon Songha-ri, 10.v.2008, HS Lee.

Floral records: Japan: *Deutzia crenata* Sieb. et Zucc; *Abelia serrata* Sieb. et Zucc.; *Erigeron philadelphicus* L.; *Castanea crenata* Sieb. et Zucc.

Distribution: Korea (southern Korea); Japan (Honshu, Shikoku, Kyushu).

Region: Eastern Palaearctic.

Korea: GG, GW, CB, JN, GN, GB.

Subgenus *Campylogaster* Dours, 1873

Camyilogaster Dours, 1873: 286. TS: *Campylogaster fulvo-crustatus* Dours, 1873=*Andrena erberi* Morawitz, 1871.

12. *Andrena* (*Campylogaster*) *chengtehensis* Yasumatsu, 1935
(Pl. 4, Female: E; Male: F)
Man-ju-ae-kkot-beol

Andrena (*Poecilandrena*) *chengtehensis* Yasumatsu, 1935, 5 (1), 12, 67: 5 Type: male, TL: China, TD: NMNS, Tokyo [male, China]; Yasumatsu, 1941, Peking nat. Hist. Bull., 15: 274 [in list].
Andrena (*Lepidandrena*) *chengtehensis*: Tadauchi et al., 1997, Esakia, (37): 198−199 [Korea].
Andrena (*Campylogaster*) *chengtehensis*: Gusenleitner and Schwarz, 2002, Entomofauna, 12 (suppl.): 171−172.
Andrena (*Lepidandrena*) *lebedevi* Popov, 1940, Trav. Inst. Zool. Acad. Sci. URSS, 6: 253−254 [female, China].
Andrena lebedevi: Wu, 1965, Economic Insects China XI, Apoidea, 30−31 [China].

Redescription:

Female. Body length 10−11 mm.

Color: Wings dusky apically. Metasomal terga 1−2 to 3 reddened.

Pubescence: Hairs on head short, those on clypeus and antennal region pale, those on vertex yellowish, not mixed with brown or blackish; those on cheeks yellowish above, whitish below; facial fovea golden. Hairs on mesoscutum and scutellum fulvous, very short, velvety, dense; propodeal corbicula fulvous, not well arranged, with internal hairs; tibial scopa composed of simple, whitish hairs. Hairs on metasomal terga sparse, yellowish; terga 2−4 with appressed, whitish hair bands; caudal fimbria pale yellow.

Structure: Process of labrum deeply and widely emarginated apically; clypeus well convex, smooth and shiny with strong punctures, without a longitudinal impunctate line; facial fovea very narrow, separated from inner margin of eye by broad punctate space; vertex round in frontal view; antennae with flagellar segment 1 shorter than flagellar segments 2+3; cheeks narrower than eye, with dense punctures, surface nearly smooth and shiny all over. Mesoscutum and scutellum smooth and shiny with dense punctures; propodeal enclosure strongly rugose all over; dorsal face of propodeum rugoso-punctate; tibial spur strongly widened basally. Metasoma smooth to vey weakly tessellate and shiny with dense strong punctures; posterior depressions of terga strongly indicated and reflexed postriorly.

Male. Body length 9−10 mm.

Color: Clypeus cream yellow with two brown spots. Wings dusky apically. Metasomal terga 1−3 to 4 reddened.

Pubescence: Hairs on head and thorax short and dense; those on clypeus whitish; those on vertex pale yellowish; those on cheeks whitish. Hairs on thorax pale yellow; those on propodeum pale yellowish above, white below. Hairs on metasomal terga short, whitish, except for tergum 6 with pale yellowish hairs; terga 2−5 with white hair bands.

Structure: Process of labrum moderate, convex, deeply emarginated apically; clypeus well convex, smooth, with dense, strong punctures, without a longitudinal impunctate line; antennae with flagellar segment 1 shorter than flagellar segments 2+3; cheeks as broad as eye seen in profile. Mesoscutum and scutellum smooth and shiny, with dense, strong punctures; propodeum strongly rugose all over; dorsal face of propodeum strongly rugoso-punctate; tibial spur strongly widened basally. Metasomal terga smooth and shiny, tergum 1 with dense, strong punctures, terga 2−5 with smaller, weaker punctures; posterior depressions of terga strongly indicated and reflexed postriorly.

Remarks: This species is distinctive by having the process of labrum deeply emarginated, the female mesoscutum with dense, velvety hairs, the matasomal terga densely punctate, the posterior depressions of terga reflexed posteriorly and the male clypeus cream yellow.

Specimens examined: [JELKU] KOREA: 1♂, GG Suigen (=Suwon), 30.viii.1923, K. Sato.

Floral records: Not available.

Distribution: Korea (Centra); China (Hebei, Inner Mongolia, Shandong, Jiangsu, Anhui Provs.).

Region: Eastern Palaearctic.

Korea: GG.

Subgenus *Chlorandrena* Pérez, 1890

Chlorandrena Pérez, 1890: 172. TS: *Andrena humilis* Imhoff, 1832.

13. *Andrena* (*Chlorandrena*) *knuthi* Alfken, 1900 (Pl. 5, Female: A; Male: B)
K-nu-d-ae-kkot-beol

Andrena knuthi Alfken, 1900, 26: 178, Type: female; TL: Japan; TD: ZMHB [female & male].
Andrena knuthi: Kim, 1970: 661, 825.
Andrena (*Chrysandrena*) *knuthi*: Hirashima, 1952: 41 (first Korean record); Kim, 1996: 211.
Andrena (*Chlorandrena*) *knuthi*: Tadauchi, 1988: 7−8; ESK & KSAE, 1994: 266; Tadauchi et al., 1997: 200 (in list); Lee & Paik, 2003: 127−128; Gusenleitner and Schwarz, 2002: 389−390; Paek et al., 2010: 212; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 89 [photos].

Description: Based on the redescription by Hirashima (1963).

Female. Body length 9 mm.

Pubescence: Hairs on full body including legs nearly concolorous in yellow, not mixed with brownish hairs; hairs on head and thorax more or less short, not specially denseh. Dorsal fringe of propodeal corbicula scanty, with hairs not arranged in a compact fringe; interior of corbicula hairy posteriorly; tibial scopa considerably well developed, composed of long, dense, densely branched hairs; Hairs on metasoma scanty; 1st tergum broadly bare dorsally; posterior margin of 2nd with lateral, that of 4th with nearly complete, sparse fringes of subappressed soft branched hairs; caudal fimbria dense.

Structure: Process of labrum rather short, apex entire; clypeus well convex, tessellate-punctate basally, nearly smooth and more coarsely punctate apically; facial fovea well indicated, separated from eye margin by a narrow space; antennae short, with 3rd segment about as long as next two segments together; cheeks about as broad as eyes seen in profile, somewhat receding. Mesoscutum narrowly tessellate-punctate anteriorly, broadly nearly smooth with enamel-like lustre posteriorly, more or less coarsely punctate with punctures irregular in distribution; scutellum well convex, shiny; propodeal enclosure tessellate, narrowly wrinkled basally; posterior spur of hind tibia elongate, slightly widened and curved subbasally. Metasoma nearly smooth and shiny; 1st tergum with sparse microscopical punctures; 2nd and the following terga with punctures very weak; pos-

terior depressions of terga not well indicated.

Male. Body length 8 mm.

Color: Black; clypeus nearly entirely or at least more than lower half of clypeus pale yellow.

Pubescence: Hairs on head and thorax rather long and more or less dense; those on clypeus white, downy anteriorly; those on face, frons, vertex and cheeks above yellowish. Hairs on thorax yellowish above, whitish below, not mixed with brownish hairs; Hairs on metasoma short and scanty, yellowish; posterior margins of 2nd tergum with lateral, that of 4th with nearly complete, indistinct fringes of downy yellowish hairs; metasomal sterna, especially 2nd, hairy throughout.

Structure: Process of labrum transverse, slightly emarginate at tip; clypeus well convex, shiny, more or less densely punctate; antennae moderately long, 3rd segment about one and one-half times as long as broad, much shorter than 4th plus 5th; 4th segment a little broader than long, 5th about as long as broad, 6th a little longer than broad; ocellocular space more or less deeply concaved; cheeks slightly narrower than large eyes seen in profile, much receding, rugulose. Mesoscutum shiny, densely tessellate anteriorly, more or less coarsely punctate with punctures irregular in distribution; scutellum rather strongly convex, shiny, weakly roughened posteriorly; propodeal enclosure tessellate, wrinkled basally; mesopleuron tessellate, with roughened punctures which are more coarser than those on without special modification, shiny. Metasomal terga nearly smooth with microscopical punctures, 2nd and the following terga with weak, not dense, somewhat irregular punctures; posterior depressions of terga not well indicated.

Remarks: It is similar to *Andrena knuthiformis* Hirashima in the propodeal enclosure less rugose and the clypeus shiny and smooth at apicomedian area. But it is separated from *knuthiformis* by the process of labrum entire or very weakly emarginate, the male clypeus with yellow maculae at apical $^1/_2$ and lower paraocular area without yellow maculae (Xu and Tadauchi, 2002).

Specimens examined: none.

Floral records: Japan: *Sonchus oleraceus*, *Youngia japonica*, *Picris hieracioides* var. *glabrescens*, *Lactuca stolonifera*, *Lactuca dentata*, *Lactuca dentata* var. *amplifolia*, *Erigeron annuus*, *Heracleum lanatum*, *Oxalis corniculata*, *Chrysanthemum leucanthemum*, *Rosa multiflora*, *Brassica campestris*, *Taraxacum japonicum*, *Ranunculus acris* var. *japonicus*, *Ranunculus glaber*, *Ranunculus repens*, *Trigonotis peduncularis*, *Capsella bursapastoris*, *Potentilla wallichiana*, *Rubus palmatus* f. *coptophyllus*, *Raphanus sativus* var. *acanthiformis*, *Astragalus sinicus*, *Calystegia soldanella*, *Torilis japonica*.

Distribution: Korea (southern Korea); Japan (Hokkaido, Honshu, Sado Is., Shikoku, Kyushu, Tsushima Is., Tanegashima Is, Yakushima Is.).

Region: Eastern Palaearctic.

Korea: Unknown.

14. *Andrena* (*Chlorandrena*) *knuthiformis* Hirashima, 1952
(Pl. 5, Female: C; Male: D)
K-nu-d-hyeong-ae-kkot-beol

Andrena (*Chrysandrena*) *knuthiformis* Hirashima, 1952: 43. Type: male; TL: China TD: JELKU [female & male].

Andrena (*Chlorandrena*) *knuthiformis*: Kim, 1996: 211; Tadauchi et al., 1997: 200 (in list); Lee & Paik, 2003: 128; Gusenleitner and Schwarz, 2002: 390; Paek et al., 2010: 212.

Description: Based on the redescription by Xu and Tadauchi (2002).

Female. Body length 9.5 mm.

Pubescence: Hairs on head moderately dense, dull yellowish; facial fovea bright yellow. Hairs on mesoscutum and scutellum sparse, longer peripherally; propodeal corbicula poorly developed, internal area with sparse, simple hairs; trochanteral floccus well developed, branched, curling, yellowish; femoral floccus loose; tibial scopal hairs rather long, branched throughout. Hairs on metasomal terga rather short, sparse, yellowish; tergum 2 with yellowish hairs laterally, terga 3−4 with obscure apical fasciae; caudal fimbria bright yellow; sterna 2−5 with erect, sparse subapical fimbriae, dull yellow.

Structure: Vertex round, densely tessellate with close minute punctures; facial fovea shallow, not narrowed below, not separated from eye by narrow polished space; clypeus well convex, finely tessellate basally, smooth and feebly shiny apically with weak, sparse punctures; process of labrum weakly emarginate apically; cheeks as broad as eye. Mesoscutum nearly smooth and shiny with punctures; propodeal enclosure densely tessellate at apical $^{2}/_{3}$ finely rugulose at basal $^{1}/_{3}$; dorsal face smooth and polished with distinct punctures; mesepisternum finely tessellate, weakly shiny medially, punctures distinct. Metasomal terga smooth and shiny, tergum 1 with scattered microscopic punctures, irregular in distribution; posterior depressions of terga broad, weakly indicated; pygidial plate V-shaped with weakly raised triangular area.

Male. Body length 8 mm.

Color: Black; clypeus and lower paraocular area with yellow maculae.

Pubescence: Hairs on head abundant, pale yellowish. Hairs on mesoscutum almost scanty, pale yellowish laterally; those on scutellum and propodeum dense, longer; those on mesepisternum long, whitish to white. Hairs on metasomal terga scanty, very short, whitish medially, relatively abundant, longer laterally; terga 2−5 with obscure, suberect whitish hair bands; sterna 2−5 with well-formed, whitish subapical fimbriae.

Structure: Vertex rounded, roughened at middle, tessellate with punctures near top of eyes; clypeus well convex, smooth and shiny with punctures, sparser toward apicomedial margin; process of labrum deeply emarginate in the middle; cheeks broader than eye. Mesoscutum smooth and shiny except weakly tessellate anteriorly, surface with minute punctures; propodeal enclosure tessellate at apical $^{2}/_{3}$, rugose at basal $^{1}/_{3}$; dorsal face weakly tessellate with punctures. Metasomal terga smooth and shiny with shallow, sparse small punctures; posterior depressions of terga weakly indicated; sterna 2−5 weakly tessellate with punctures; sternum 6 weakly reflected, emarginated apically.

Remarks: It is very similar to *Andrena knuthi* Alfken, but is separated from *knuthi* by the antennae yellowish brown, the process of labrum weakly to strongly emarginate and the clypeus and lower paraocular area with yellow maculae (Xu and Tadauchi, 2002).

Specimens examined: Not examined.

Floral records: China: *Brassica* sp..

Distribution: Korea (southern Korea); China (Jilin, Fujian Provs., Beijing).

Region: Eastern Palaearctic.

Korea: Unknown.

15. *Andrena* (*Chlorandrena*) *okinawana* Matsumura et Uchida, 1926 (Pl. 5, Female: E; Male: F)

Nam-bang-ae-kkot-beol

Andrena okinawana Matsumura et Uchida, 1926: 69, Type: female, TL: Japan; TD: JHUM.
Andrena (*Chlorandrena*) *knuthi okinawana*: Hirashima, 1963b: 262.
Andrena (*Chlorandrena*) *okinawana*: Tadauchi & Lee, 1992: 54 (first Korean record); Kim, 1996: 210; Tadauchi et al., 1997: 200 (in list); Gusenleitner & Schwarz, 2002: 390; Lee & Paik, 2003: 128; Paek et al., 2010: 212; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 90 [photos].

Description: Based on the redescription by Hirashima (1963).

Female. Body length 9 mm.

Pubescence: Similar to *Andrena knuthi* Alfken.

Structure: Similar to *Andrena knuthi* Alfken except for the following characters, but difficult in female: Clypeus strongly tessellate at basal $^1/_2$; process of labrum not emarginated; propodeal enclosure more rugosed ($^1/_2$ to $^2/_3$ basally); metasomal terga more strongly punctate.

Male. Body length 8 mm.

Color: Black; clypeus and lower paraocular area with yellow maculae, which is useful for differentiation of the two species.

Pubescence: Very similar to *Andrena knuthi* Alfken.

Structure: Very similar to *Andrena knuthi* Alfken except for the following characters: Clypeus strongly tessellate at basal $^1/_2$; process of labrum not emarginated; propodeal enclosure more rugosed ($^1/_2$ to $^2/_3$ basally); metasomal terga more strongly punctate.

Remarks: It is closely similar to *Andrena knuthi* Alfken but is separated from *knuthi* by the clypeus strongly tessellate at basal $^1/_2$, the process of labrum not emarginate, the propodeal enclosure more rugosed ($^1/_2$ to $^2/_3$ basally), the metasomal terga more strongly punctate and the male clypeus and lower paraocular area with yellow maculae (Xu and Tadauchi, 2002).

Specimens examined: [JELKU] KOREA: 1♂, JB San Lyong Li, San Nae Meon, NamWeonGun, 12.v.1991, O. Tadauchi; 2♀, JB Kan-Ki Li, Ii Paek Meon, NamWeonGun, 16.v.1991, O. Tadauchi. [KEIU] KOREA: 1♀, GG Cheonmasan, 25.vi.1961, ??; 1♀, GG Pocheon, 8.vi.1975, DI An; 3♀, CN Taeaneup Baekhwasan, 26.v.2001, YG Park; 2♀, CN Taeaneup Baekhwasan, 26.v.2001, JD Yeo; 1♀, CN Taeaneup Baekhwasan, 26.v.2001, HS Won; 1♂, GG Gangchon, 22.v.1977, HG Lee; 1♀, JB Wanju Bongsilsan, 9.v.1997, MR Kim. [QIAL] KOREA: 2♀, JJ Aewoleup Naneup-ri Saeparanyurionsil, 12.v.2005, HS Lee.

Floral records: Japan: *Sonchus oleraceus*, *Brassica* spp..

Distribution: Korea (Central, Southern, Jeju); Japan (Tsushima Is, Amami-Oshima Is., Kikai Is., Okinoerabu Is., Tokunoshima Is., Okinawa-honto Is., Izena Is., Kume Is., Ishigaki Is., Iriomote Is.); China (Zhejiang, Sichuan, Henan Provs., Beijing).

Region: Eastern Palaearctic.

Korea: GG, CN, JB, JJ.

16. *Andrena* (*Chlorandrena*) *taraxaci orienticola* Strand, 1915
(Pl. 6, Female: A; Male: B)
Dong-yang- ae-kkot-beol

Andrena humilis var. *orienticola* Strand, 1915, 4: 72; Type: female; TL: China; TD: DEI.
Andrena (*Chlorandrena*) *taraxaci chikuzenensis* Hirashima, 1957, Mushi, 30: 52 (Japan); Tadauchi et al., 1997: 198 (first Korean record, Jejudo) [Syn. by Xu et Tadauchi, 1998].
Andrena (*Chlorandrena*) *taraxaci orienticola*: Warncke, 1967: 204, 295; Xu et Tadauchi, 1998: 97; Gusenleitner & Schwarz, 2002: 390; Lee & Paik, 2003: 128; Paek et al., 2010: 212; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 91 [photos].

Description: Based on the redescription of *A. taraxaci chikuzenensis* by Hirashima (1963).

Female. Body length 10 mm.

Pubescence: Hairs on full body rather abundant and nearly uniform in color, dusky yellowish brown, except for tibial scopa and caudal fimbria which are rather bright and for some nearly fuscous hairs on sides of face, frons and cheeks above; facial fovea blackish. Hairs on thorax above not obscure integument; propodeal corbicula with dorsal fringe of long, not arranged hairs; femoral floccus composed of dense, long, branched hairs; tibial scopa very large, compact, composed of similar hairs on hind femora. Hairs on posterior margins of 2nd to 4th metasomal terga downy, slightly more dense than those on elsewhere; caudal fimbria long, compact.

Structure: Process of labrum much broader than long, with apical margin entire; clypeus well convex, dull, closely punctate with punctures small and rather roughened; antennae rather short with 3rd segment longer than next two segments together which are broader than long respectively; cheeks broader than eyes seen in profile, rather convex above, slightly receding below, striate-punctate or nearly weakly roughened. Mesoscutum weakly tessellate and slightly shiny posteriorly; otherwise densely tessellate, duller, with punctures weak, roughened anteriorly; propodeal enclosure nearly shagreened, rugulose basally; mesopleuron roughened. Metasomal terga tessellate with weak, roughened punctures, less coarsely sculptured than in nominate form posterior depressions of intermediate terga broad, rather well indicated.

Male. Body length 8 mm.

Pubescence: Hairs on full body long and abundant but not distinctly obscure integument; hairs on face, including clypeus, and cheeks whitish, those on frons, vertex and cheeks above slightly yellowish; head without brownish or brown hairs; hairs on apical margin of clypeus downy. Hairs on thorax yellowish above, whitish below. Hairs on metasomal terga more yellowish apically than basally; posterior margins of 2nd to 5th metasomal sterna each with a complete fringe of dense, suberect, bright, nearly fulvous hairs.

Structure: Process of labrum distinctly transverse, slightly convex, very slightly emarginate apically; clypeus strongly convex, especially so anteriorly, densely rugoso-punctate with punctures small; antennae rather short, with 3rd segment about twice as long as broad, slightly longer than next two segments together which are distinctly broader than long respectively; cheeks broader than eyes, slightly receding, striate-punctate or nearly weakly roughened. Mesoscutum narrowly nearly smooth medially, otherwise densely tessellate, with roughened punctures; propodeal enclosure nearly shagreened, rugulose basally. Metasomal terga weakly shiny, with roughened puncutres; posterior margins of apical terga broad and well indicated, that of 6th tergum somewhat thick, gently emarginate.

Remarks: This subspecies is separated from the European nominate subspecies by the head with much paler hairs and the mesoscutum, scutellum and metasomal terga less tessellate and more shiny. In eastern Asia it widely distributes from Russian Far East to China, Korean Peninsula and Japan (Xu and Tadauchi, 2002).

Specimens examined: [JELKU] KOREA: 2♀1♂, Koryo (=Kwangneung), 9.v.1937 (T. Kusanagi). [KEIU] KOREA: 1♀, GW Inje 7.v.1984, MR Kim. [QIAL] KOREA: 1♀, CN Taean-gun Iwon-myeon Nae3ri, 20.v.2006, SU Park.

Floral records: Japan: *Taraxacum platycarpum*, *Sonchus oleraceus*, *Stellaria media*, *Lactuca stolonifera*, *Lactuca dentata*.

Distribution: Korea (Central); Japan (Honshu, Shikoku, Kyushu, Tsushima Is.); China (Beijing, Qinghai, Gansu, Hebei, Jilin, Liaoning, Shandong Provs.); Russia (Far East area).

Region: Eastern Palaearctic.

Korea: GG, GW, CN.

Subgenus *Cnemiandrena* Hedicke, 1933

Cnemiandrena Hedicke, 1933: 213. TS: *Melitta nigriceps* Kirby, 1802.

17. *Andrena* (*Cnemiandrena*) *denticulata seneciorum* Hirashima, 1964
(Pl. 6, Female: C; Male: D)
Hi-ra-shi-ma-ae-kkot-beol

Andrena (*Cnemiandrena*) *seneciorum* Hirashima, 1964: 40−43; Type: male; TL: Hokkaido, Japan; TD: JELKU.

Andrena (*Cnemiandrena*) *seneciorum*: ESK & KSAE, 1994: 266; Kim, 1996: 211.

Andrena seneciorum: Kim, 1970: 661−662, 825 (first Korean record).

Andrena (*Cnemiandrena*) *denticulata seneciorum*: Tadauchi et al., 1997: 200 (in list); Lee & Paik, 2003: 128; Paek et al., 2010: 212; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 93 [photos].

Description: Based on the description of *A. seneciorum* by Hirashima (1964).

Female. Body length 10−11 mm.

Pubescence: Hairs on head abundant; hairs on clypeus and cheeks long, dense, dull white to slightly yellowish, those on vertex fuscous; facial fovea chocolate to blackish. Hairs on thorax abundant and long except for those on median portion of mesoscutum, shorter and sparser; those on thorax dull yellowish gray above and whitish below except for sparse to dense fuscous hairs on mesoscutum and scutellum; propodeal corbicula quite well developed with dorsal fringe of long, dense, well arranged, distinctly yellowish hairs; interior of corbicula with sparse, long, coarse hairs anteriorly; tibial scopa slightly yellowish beneath and distinctly fuscous above; tibial scopa compact, composed of short, well arranged, simple hairs. Hairs on metasomal terga dense; those on 1st and 2nd terga long, erect to suberect, yellowish gray; those on 5th tergum including caudal fimbria fuscous; hairs on posterior margin of 1st tergum downy, not forming a definite band, those of 2nd

to 4th terga appressed, forming a dull yellowish gray, quite broad, complete hair band on each tergum.

Structure: Process of labrum distinctly tapering toward apex where deeply notched; clypeus well convex, weakly tessellate, weakly shiny, rather coarsely and strongly punctate with punctures irregular in distribution at middle; antennae with 3rd segment as long as 4th plus 5th; cheeks rounded, its outline very slightly converging posteriorly seen from above, slightly broader than eyes seen in profile. Mesoscutum densely tessellate, rather sparsely and not strongly punctate; scutellum broadly nearly smooth basally, sparsely and weakly punctate, feebly shiny; propodeal enclosure tessellate, somewhat longitudinally wrinkled basally; legs with mid basitarsi dilated medially, nearly as wide as broad hind basitarsi which is broadest subbasally and tapering toward apex; hind tibiae with anterior margins slightly emerginate, widened subapically. Metasomal terga densely tessellate, without distinct punctures, feebly shiny; posterior depressions of terga broad, not distinctly indicated.

Male. Body length 8−9 mm.

Pubescence: Hairs on face, including clypeus, and on scape dense, moderately long, dull white, those on frons, vertex and cheeks above fuscous, not dense; hairs on cheeks below long, dense dull white, more conspicuous than those on the rest of cheeks. Hairs on thorax long, dense, yellowish above (especially on mesoscutum), dull white below, mixed with sparse to dense fuscous hairs on posterior portion of mesoscutum; hairs on legs white to nearly bright ferruginous, without fuscous or blackish ones. Hairs on 1st and median portion of 2nd terga long, not specially dense, pale, those on the rest of 2nd and the following terga short, dense, mostly brownish to fuscous; hairs on posterior margins of 3rd and 4th terga downy, whitish, forming a more or less evident hair band on each tergum.

Structure: Head large, broader than thorax seen from above; mandibles long, slender, falciform, slightly angulate basally; process of labrum strongly protuberant, deeply notched medially; clypeus scarcely convex, nearly smooth, not specially strongly punctate with punctures irregular in distribution and sparse medially, shiny; clypeus distinctly truncate, antennae moderately long, 3rd segment a little less than twice as long as broad, distinctly longer than 4th which is slightly longer than broad and about as long as 5th; upper portions of cheeks elongate and angulate posteriorly; cheeks slightly angulate near posterior bases of mandibles; cheeks broad, scarcely receding, broader than eyes seen in profile; posterior margins of cheeks distinctly keeled. Mesoscutum densely tessellate, except for median portion where narrowly nearly smooth, or very weakly tessellate, with punctures sparse, weaker than those on clypeus; scutellum well convex, broadly nearly smooth but not specially shiny, weakly and sparsely punctate; propodeal enclosure finely tessellate, rugose basally; Metasomal terga densely to weakly tessellate, nearly impunctate, weakly shiny; posterior depressions of terga not well indicated.

Remarks: This subspecies is different from the nominate subspecies by the metasomal terga with longer dull yellowish hair bands, the thorax and metasomal terga 1−2 with more dull yellowish long hairs and the cheeks with weaker projections near mandibles in male. (Tadauchi and Xu, 2002).

Specimens examined: [JELKU] JAPAN: Holotype male and allotype female (Entomol. Lab., Kyushu Univ., Fukuoka), Nukabira, Tokachi, Hokkaido, Japan, 1−4.viii.1953 (Y. Hirashima). [KEIU] KOREA: 3♀, GG Cheonmasan, 12.x.1980, CH Byun; 7♀, GG Bogwangsa, 2.x.1982, ML Kim; 2♀, GG Dobongsan, 9.x.1957, GN Lee; 2♀, no label.

Floral records: Japan: *Senecio palmatus*, *Senecio cannabifolius*, *Aster glehni*, *Picris hieracioides* var.

glabrescens, *Erigeron annuus*.

Distribution: Korea (southern Korea); Japan (Hokkaido, Honshu, Kyushu); China (Shannxi Prov.); Russia (Far East area).

Region: Eastern Palaearctic.

Korea: GG, GN.

18. *Andrena* (*Cnemiandrena*) *maetai* Hirashima, 1964
(Pl. 6, Female: E; Male: F)
Ga-eul-ae-kkot-beol

Andrena (*Cnemiandrena*) *maetai* Hirashima, 1964: 43−45, Type: male, TL: Tsushima Is., Japan, TD: JELKU [female & male]. Tadauchi, 1989: 683; Tadauchi and Xu, 2002,: 77, 78, 100 [in key, in list]; Gusenleitner and Schwarz, 2002: 450−451; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 94 [photos].

Description: Based on the description by Hirashima (1964).

Female. Body length 9−10 mm.

Pubescence: Hairs on head and thorax abundant, those on metasoma not specially so. Hairs on face including clypeus, and cheeks more or less short, white, those on vertex slightly brownish, those on occiput yellowish; facial fovea brownish above, paler below. Hairs on thorax above long, pale to pale yellowish brown, mixed with brownish to fuscous hairs on mesoscutum, those on thorax below pale to white; tibial scopa narrowly whitish in front; tibial scopa large, compact, composed of more or less long, well arranged hairs. Hairs on 1st metasomal tergum long, paler, those on the following terga short, suberect to nearly appressed, pale and brownish; caudal fimbria brown or fuscous; posterior margins of 2nd to 4th terga each with a broad, complete, well indicated band of white, appressed hairs.

Structure: Process of labrum rugulose, narrowing toward apex where slightly emarginate; clypeus slightly convex, densely tessellate basally and becoming smoother apically, more or less strongly punctate with punctures irregular in distribution and sparse medially; antennae with 3rd segment a little longer than 4th plus 5th; cheeks rounded, a little broader than eyes seen in profile, densely tessellate, feebly punctate near eyes. Mesoscutum densely tessellate anteriorly, weakly so and therefore slightly shiny medially, weakly and sparsely punctate with punctures much weaker than those on clypeus; scutellum broadly nearly smooth or weakly tessellate, shiny, scattered with weak punctures, narrowly roughened apically; propodeal enclosure tessellate, narrowly rugose or wrinkled basally; legs with mid basitarsi strongly expanded medially, a little broader than hind basitarsi which is widest subbasally and tapering toward apex; hind tibiae expanded subapically. Metasomal terga densely tessellate, nearly impunctate, weakly shiny; posterior depressions of terga indistinct.

Male. Body length 8 mm.

Pubescence: Hairs on head and thorax abundant, long, nearly uniformly dull white or slightly yellowish on thorax above, without admixture of blackish ones; hairs on legs white to yellowish. Hairs on 1st and median portion of 2nd terga long, whitish, those on the rest of 2nd short, whitish, those on the following terga short, brownish; hairs on 6th tergum whitish; posterior margins of

2nd to 4th terga with sparse white hair fringes laterally; posterior margins of 2nd to 5th sterna each with a complete fringe of long, curled, silvery hairs.

Structure: Mandibles long, slender, falciform, not angulate basally; process of labrum small, strongly protuberant, excavated beneath; clypeus hardly convex, broadly nearly smooth medially, weakly punctate with punctures sparse medially and irregular in distribution; antennae moderately long, 3rd segment more than one and one-half times as long as broad, distinctly longer than 4th which is about as long as wide and a little shorter than 5th; upper portions of cheeks elongate but not angulate posteriorly seen from above; cheeks much broader than eyes seen in profile, neither carinate posteriorly nor angulate beneath near posterior bases of mandibles, broadly smooth and feebly punctate near eyes, tessellate posteriorly. Mesoscutum tessellate anteriorly, nearly smooth and shiny medially, weakly and sparsely punctate; scutellum well convex, broadly smooth and shiny, scattered with weak punctures, narrowly tessellate anteriorly; propodeal enclosure tessellate, narrowly rugose or wrinkled basally. First metasomal tergum tessellate, the following terga weakly so or nearly smooth, indistinctly punctate; posterior depression indistinct.

Remarks: This species is similar to *Andrena denticulata* (Kirby) in having the vertex angulate laterally (weakly indicated in this species) and the clypeus flat in male. But it is separated by the smaller size and the flagellar segments reddish yellow beneath in both sexes, the process of labrum weakly emarginate, the mesoscutum less tessellate with less blackish hairs medially and the facial fovea brown in female, the metasomal sterna 2−5 with long curled subapical fringes in male (Tadauchi and Xu, 2002). This species is for the first time recorded in Korea.

Specimens examined: [JELKU] JAPAN: Holotype male and allotype female (Entomol. Lab., Kyushu Univ., Fukuoka), Mt. Ariake, Tsushima Is., Japan, 10.x.1953 (Y. Maeta). [QIAL] KOREA: 2♀, Hantae arboatum, Yongin GG, 19.ix.2001, Lee HS.

Floral records: Japan: *Lactuca denticulata*, *Solidago altissima*.

Distribution: Korea (southern Korea); Japan (Kyushu, Tsushima Is.); Russia (Far East area).

Region: Eastern Palaearctic.

Korea: GG.

Subgenus *Euandrena* Hedicke, 1933

Euandrena Hedicke, 1933: 212−213. TS: *Andrenabicolor* Fabricius, 1775.

19. *Andrena* (*Euandrena*) *luridiloma* Strand, 1915 (Pl. 7, Female: A; Male: B)
Jag-eun-teol-ae-kkot-beol

Andrena luridiloma Strand, 1915, 4: 72−73, Type: female; TL: China; TD: DEI.

Andrena (*Euandrena*) *luridiloma*: Xu and Tadauchi, 1998: 93−94 [redescription]; Gusenleitner and Schwarz, 2002: 445; Xu and Tadauchi, 2012: 78, 86−87 [female, in key]; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 97 [photos].

Andrena (*Euandrena*) *stellaria* Hirashima, 1964: 49 (Japan); Tadauchi & Lee, 1992: 49 (first Korean record); Kim, 1996: 211; Tadauchi et al., 1997: 200 (in list); Lee & Paik, 2003: 129; Paek et al., 2010:

212.

Description: Based on the redescription of Hirashima (1964).

Female. Body length 9.5 mm.

Pubescence: Hairs on head whitish; occasionally sparse brownish hairs present on frons laterally; facial fovea bright brown. Hairs on thorax dense, pale fulvous above, becoming whitish below, without admixture of darker ones; tibial scopa more or less well developed with long, somewhat loose, silver white hairs; tibial scopa slightly brownish above basally. Hairs on metasoma short, scanty, whitish; posterior margins of 2nd to 4th metasomal terga each with a nearly complete band of dense, decumbent, white hairs; posterior margins of 1st metasomal tergum with similar hairs not forming a distinct band; caudal fimbria pale brown.

Structure: Malar space large, nearly trapezoid with apical margin entire; clypeus well convex, shiny somewhat strongly and rather sparsely punctate with a median, longitudinal, flat, weakly tessellate and impunctate space; antennae with 3rd segment about as long as next two segments together which are broader than long, respectively; facial fovea narrow; cheeks receding, about as broad as more or less elongate eyes seen in profile, nearly shagreened posteriorly. Mesoscutum nearly shagreened with an indication of small, somewhat roughened punctures; scutellum approximately as in mesoscutum; propodeal enclosure roughened basally. Metasomal terga densely tessellate, almost impunctate; posterior depressions of terga weakly indicated.

Male. Body length 7.5 mm.

Pubescence: Hairs on head long, white or whitish, mixed with blackish hairs on sides of face, frons and cheeks above. Hairs on thorax long, more or less dense, primarily whitish to white, without admixture of blackish hairs or rarely sparse, blackish hairs on mesopleuron above; hairs on legs whitish. Hairs on 1st metasomal tergum long, becoming denser and downy near posterior margin; hairs on 2nd and the following terga short, sparse; posterior margins of 2nd to 4th metasomal terga with white hair fringes interrupted or obscured medially; posterior margins of 2nd to 5th metasomal sterna each with a complete fringe of suberect, silver white hairs.

Structure: Head about as broad as thorax seen from above; process of labrum large, notched apically; clypeus densely punctate with interspaces weakly tessellate; antennae elongate, with 3rd segment longer than broad, about as long as or a little longer than next segment; 5th and the following segments longer than broad; vertex nearly roughened; cheeks receding, about as broad as eyes seen in profile, nearly shagreened posteriorly. Mesoscutum shagreened with an indication of weak, roughened punctures; scutellum nearly as in mesoscutum; propodeal enclosure roughened or wrinkled basally; Metasoma feebly shiny; metasomal terga tessellate, impunctate; posterior depressions of terga weakly indicated.

Remarks: It is similar to *Andrena hebes* Hirashima, but is separable by the clypeus slightly longer, the propodeal enclosure more sculptured, the metasomal terga slightly smoother in female and by the malar space linear in male.

Specimens examined: [QIAL]. KOREA: 1♀, Hadari Heungcheon Yeoju GG, 24.IV.2000, YB Lee.

Floral records: China: *Brassica campestris*, *Raphanus* sp., *Taraxacum* sp..

Distribution: Korea (southern Korea); Japan (Hokkaido, Honshu, Sado Is., Shikoku, Kyushu, Tsushima Is., Tanegashima Is.); China (Zhejiang, Jiangsu, Shandong, Liaoning, Henan Provs., Shanghai, Beijing).

Region: Eastern Palaearctic.

Korea: GG.

20. *Andrena* (*Euandrena*) *plumosella* Gusenleitner et Schwarz, 2002 (Pl. 7, Female: C; Male: D)

Teol-ae-kkot-beol

Andrena (*Euandrena*) *plumosa* Kim et Kim, 1989a: 200−201. Type: female; TL: Korea; TD: KEIK [nec *Apis plumosa* Christ, 1791].

Andrena (*Euandrena*) *plumosa*: ESK & KSAE, 1994: 266 (Korea); Kim, 1996: 211 (Korea); Tadauchi et al., 1997: 200 (Korea, in list); Lee & Paik, 2003: 128; Paek et al., 2010: 212.

Andrena (*Euandrena*) *plumosella* Gusenleitner & Schwarz, 2002: 173 [new name for *A. plumosa* Kim et Kim, 1989].

Redescription: Female. Body length 9.8−11.3 mm.

Pubescence: Hairs on head light brown except for black on the occiput. Hairs on thorax brown except for sparser blackish hairs on median area. The hairs on posterior of mesonotum and scutellum mixed with black hairs. The hairs on mesopleural long light yellowish. Propodeum covered with long light yellowish hairs. Tibial scope of hind leg fringed and long light yellowish hairs. Metasomal terga with light yellowish hairs. Hairs on metasoma tergum 1 long, on 3rd−4th terga short brown hairs. Terga 2nd−4th with light yellow hair bands on posterior margin, one on 2nd tergum interrupted medially.

Structure: Head broader than length in front view. Clypeus faintly shiny and tessellate with round punctures. Process of labrum semicircular, slightly rmarginate at the median tip. The area above antennal socket wrinkled longitudinally. The area of between eyes and clypeus tessellate, faintly shiny, with longitudinally striate. Facial fovea small, base line of facial fovea and antenna socket is the same position. Upper end of facial fovea occupying about one-thirds the width of ocellocullar space. Mesonotum coarsely tessellate and punctuate with punctures round, densely punctuate medialy. Mesopleura coarsely tessellate with punctures. Propodeum wrinkled basally. Smoothly tessellate and faintly shiny posteriorly. Outside of propodeum feebly shiny with punctures and wrinkled tessellate. In wing, Nervulus receiving inside of basal vein. Stigma dark brown. Metasomal terga black, with strong shine and faintly tessellate with small punctures.

Male: Unknown.

Remarks: This species differs from *A. jeholensis* in Yasumatsu (1935) by the following characters. In *A. jeholensis* body length is 13 mm large, stigma yellowish brown, abdomen impunctate. But this species body is length about 10 mm small, Stigma dark brown. metasoma densely and clearly punctuated with small punctures.

Specimens examined: [QIAL] KOREA: 1♀, Songchu valley, Jangheung Ynagju GG, 8.vi.2010, JC Jeong. [SNUE] KOREA: 1♀, Seoul, 12.v.1990, HJ Kim; 1♀, Mt. Bonam, Gapyeong GG Kang; 1♀, Mt. Gwnaggyosan Suwon GG, 30.iv.1987, HTT; 1♀, Mt. Gwnaggyosan Suwon GG, 18.v.1992, KSI; 1♀, Mt. Gwnaggyosan Suwon GG, 27.v.1989, Z Lee; 1♀, Mt. Gwnaggyosan Suwon GG, 29.v.1990, KHU; 1♀, Mt. Gwnaggyosan Suwon GG, 29.v.1990, ZL; 1♀, Mt. Gwnaggyosan Suwon GG, 23.vi.1990, Seo JH; 1♀, Arboretum CALS Suwon GG, 24.v.1986, DG Lee; 1♀, Woncheon, Suwon GG, 6.iv.1990, Z.L.; 1♀, Suwon GG, 25.iii.1990, IT Kim; 1♂, Anyang GG, 8.v.1990, KH Han; 1♀, Anyang GG, 27.v.1990, OSD; 1♀, Cheongpyeong GG, 31.v.1986, JH Jeong; 1♀, Hwaseong GG, 12.vi.1992, SW Park; 1♀, Mt. Wolaksan CB, 22.vi.1992, YJ Yun; 1♀, Jeju Island, 3.v.1992, JIB; 1♀, Jeju Island, 13.vii.1993, SK Jeon.

Floral records: Not available.
Distribution: Korea (Central, Jeju).
Region: Eastern Palaearctic.
Korea: GG, CB, JJ.

21. *Andrena* (*Euandrena*) *ruficrus rabicrus* Hirashima, 1957
(Pl. 7, Female: E; Male: F)
Bul-geun-dari-teol-ae-kkot-beol

Andrena (*Euandrena*) *ruficrus rabicrus* Hirashima, 1957, 30: 50, Type: female, TL: Honshu, Japan, TD: JELKU.
Andrena (*Euandrena*) *ruficrus rabicrus*: Tadauchi & Lee, 1992: 50 (first Korean record); Kim, 1996: 211; Tadauchi et al., 1997: 200 (in list); Lee & Paik, 2003: 128−129; Paek et al., 2010: 212; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 98 [photos].

Description: Based on the description by Hirashima (1964) and Hirashima et al. (1979).
Female. Body length 10 mm.
Color: Legs piceous with hind tibiae and basitarsi clear ferruginous or occasionally the latter darkened, mid tarsi and small segments of hind tarsi yellowish brown or more darkened.
Pubescence: Hairs on head and thorax more or less long and abundant; those on sides of face, frons, vertex and cheeks above fuscous, those on the rest of head dull yellowish brown to whitish; facial fovea dark, appears bright brown in some light. Hairs on thorax dull yellowish brown above, becoming whitish beneath, without admixture of darker hairs; dorsal fringe of propodeal corbicula not well arranged in a compact fringe; tibial scopa well developed, composed of long, compact or sometimes more or less loose, golden hairs; hairs on hind basitarsi golden. Hairs on metasomal terga whitish; caudal fimbria brown; posterior margins of metasomal terga with sparse fringes of suberect to decumbent white hairs.
Structure: Process of labrum transverse, flat, with apical margin entire; clypeus well convex, weakly to very weakly tessellate, weakly to moderately punctate without longitudinal impunctate line; antennae with 3rd segment about equal to 4th plus 5th which are broader than long, respectively; facial fovea short; vertex shagreened; cheeks rather rounded, not distinctly receding, about as broad as eyes seen in profile, densely tessellate posteriorly. Mesoscutum nearly shagreened with more or less roughened punctures; scutellum nearly as in mesoscutum with punctures weaker and sparser; propodeal enclosure well indicated, densely reticulate, wrinkled basally. Metasomal terga tessellate with an indication of weak and sparse punctures; posterior depressions of terga weakly indicated.
Male. Body length 7 mm.
Pubescence: Head with more fuscous hairs than those in the nominate subspecies; hairs on paraocular area, antennal region, vertex and cheeks short to more or less long, fuscous; upper paraocular area with facial fovea narrowly and weakly indicated, covered with very short, dark brown, fine hairs along inner margin of eye. Hairs on thorax including propodeum long, white, intermixed with fuscous ones, especially on propodeum; legs with hairs whitish except for inner surfaces of tarsi with hairs slightly yellowish. Metasomal terga with whitish, fine, sparse, suberect, short hairs;

posterior margins of metasomal terga with sparse fringes of suberect to decumbent white hairs; posterior margins of 2nd−5th metasomal sterna with complete fringes of dense, suberect, moderately long, slightly yellowish hairs.

Structure: Process of labrum convex, slightly notched apically; clypeus well convex, basal half tessellate with moderate-sized punctures, apical half nearly smooth and weakly shiny with sparser punctures; clypeus without an indication of median longitudinal impunctate line; vertex rounded in frontal view; cheeks slightly broader than eye seen in profile; 1st flagellar segment longer than broad, a little longer than 2nd segment; 3rd and the following segments longer than broad. Pronotum moderately tessellate, without an indication of punctures; pronotal suture weakly indicated, moderately long, without humeral angle; mesoscutum shagreened with sparse, small, slightly roughened punctures; scutellum nearly as in mesoscutum with punctures a little coarser; propodeal enclosure small, wrinkled basally, granulate apically; dorsal face of propodeum coarsely sculptured. Metasomal terga very weakly tessellate with sparse, small, weak punctures; basal terga slightly more tessellate with a little stronger punctures; posterior depressions of terga weakly indicated, more or less wide.

Remarks: It is easily separated by having the hind tibiae and basitarsi clear ferruginous. The nominate subspecies occurs in Europe.

Specimens examined: [JELKU] KOREA: 2 females, Jeong Lyong Chy, San Nae Meon, Nam Weon Gun, JB, 14.v.1991, O. Tadauchi. JAPAN: Holotype female (Kyushu Univ.), Namari, Yuguchimura, Rikuchu, Honshu, Japan, 15.iv.1951, M. Nakaya. [QIAL] KOREA: 7♀, GW Hoengseong-gun Cheongtaesanhyuyangrim, 22.v.2010, HS Lee; 2♀, GW Pyeongchang-gun Odaesan Bukdaesa, 27.v.2008, HS Lee; 1♀, GW Pyeongchang, 23.iv.1996, HS Lee; 1♀, GB Bonghwa-gun Cheongyangmyeon, 29.v.2010, HS Lee; 2♀, GW Pyeongchang-gun Odaesan Bukdaesa, 13.v.2010, HS Lee; 1♀, GG Suwon SEI, 2.v.2002, HS Lee; 1♂, GG Suwon COA, 15.iv.1997, HS Lee. [KEIU] KOREA: 2♀, GG Bukhansan Uiryeong, 6.v.1996, JD Yeo.

Floral records: Japan: *Taraxacum officinale* Weber, *Petasites japonicas* Miq., *Salix* spp., *Potentilla fragarioides* L., *Potentilla yokusaiana* Makino, *Brassica campestris* L., *Gagea Zutea* Ker-Gawl.

Distribution: Korea (Central, Southern); Japan (Japan (Hokkaido, Honshu); China (Z Heilongjiang, Jilin Provs.).

Region: Eastern Palaearctic.

Korea: GG, GW, GB, JB.

Subgenus *Holandrena* Pérez, 1890

Holandrena Pérez, 1890: 176. TS: *Melitta labialis* Kirby, 1802.

22. *Andrena* (*Holandrena*) *mediocalens* Cockerell, 1931
Kok-ke-rel-ae-kkot-beol

Andrena mediocalens Cockerell, 1931, Amer. Mus. Novitate: 11. Type: female; TL: China; TD:

AMNH.

Andrena (*Gymnandrena*) *mediocalens*: Kim et Kim, 1983a: 6 (first Korean record); Kim et al., 1990: 3−4; ESK & KSAE, 1994: 266; Kim, 1996: 212.

Andrena (*Holandrena*) *mediocalens*: Tadauchi et al., 1997: 200 (in list); Lee & Paik, 2003: 129; Paek et al., 2010: 212.

Description: Based on the redescription by Tadauchi & Xu (1998).

Female. Body length 12−13 mm.

Pubescence: Hairs on clypeus and cheeks short, light brownish, those on vertex dark brownish; facial fovea dark brown. Hairs on thorax relatively dense and long, yellowish; propodeal corbicula yellowish, well arranged, with internal hairs; tibial scopa composed of simple, brownish hairs, narrowly whitish in front. Hairs on metasomal terga scanty; tergum 1 with sparse hairs, terga 2−4 with subappressed, obscure, complete hair bands; caudal fimbria blackish.

Structure: Process of labrum large, emarginate apically; clypeus slightly convex, smooth and shiny with shallow punctures; facial fovea very broad; vertex flat in frontal view; antennae with flagellar segment 1 longer than flagellar segments 2 + 3; cheeks broad, with dense shallow punctures, surface narrowly smooth and shiny near eye, very weakly tessellate posteriorly. Mesoscutum nearly smooth and shiny with dense punctures; scutellum smooth and shiny with large punctures; propodeal enclosure well defined, weakly rugose at basal $^2/_3$, densely tessellate apically; dorsal face of propodeum shiny and smooth to weakly tessellate, with dense punctures. Metasoma smooth and shiny; metasomal terga 2−4 with dense punctures; posterior depressions of terga slightly indicated.

Male. Body length 10 mm.

Color: Clypeus and lower paraocular area yellow; legs reddish brown.

Pubescence: Hairs on head and thorax short; those on clypeus relatively long, whitish; those on vertex pale yellowish; those on cheeks whitish. Hairs on thorax pale yellow; those on propodeum and legs pale yellowish. Hairs on metasomal terga short, sparse, whitish, except for tergum 6 with long, pale yellowish hairs.

Structure: Process of labrum moderate, convex, emarginated apically; clypeus smooth, shiny with sparse, shallow punctures; antennae with flagellar segment 1 shorter than flagellar segments 2 + 3; cheeks broader than eye seen in profile. Mesoscutum with dense, larger punctures; scutellum weakly shiny with dense punctures; propodeum weakly tessellate. Metasomal terga smooth and shiny, tergum 1 with scattered, fine punctures, terga 2−5 with denser, fine punctures; posterior depressions of terga narrow, not well indicated.

Remarks: This species is similar to *Andrena labialis* (Kirby), but is easily distinguished from the latter by the vertex with brownish hairs, the metasomal tergum 1 with punctures sparser and irregular in size and distribution and the caudal fimbria black. This Species is recorded by Kim and Kim (1983a), but we could not examine it.

Specimens examined: Not available.

Floral records: Not available.

Distribution: Korea; China (southeast: Jiangsu, Shanghai, Fujian Provs.).

Region: Eastern Palaearctic.

Korea: Unknown.

23. *Andrena* (*Holandrena*) *valeriana* Hirashima, 1957 (Pl. 8, Female: A; Male: B)

Val-le-ri-a-ae-kkot-beol

Andrena (*Holandrena*) *valeriana* Hirashima, 1957, 30: 56−57, Type: female, TL: Hokkaido, Japan; TD: JELKU.

Andrena (*Holandrena*) *valeriana*: ESK & KSAE, 1994: 266; Kim, 1996: 212; Tadauchi et al., 1997: 200 (in list); Lee & Paik, 2003: 129; Gusenleitner & Schwarz, 2002: 801−802; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 103.

Andrena valeriana: Kim, 1970: 662, 825 (first Korean record); Paek et al., 2010: 212.

Description: Based on the redescription by Hirashima (1964).

Female. Body length 12 mm.

Pubescence: Hairs on head short, white or whitish, without admixture of darker ones; facial fovea silvery. Hairs on thorax short, nearly uniformly white or whitish, sparse and fine on mesoscutum and scutellum; thorax without brownish hairs; dorsal fringe of propodeal corbicula short and scanty; interior of corbicula with coarse, silvery, simple hairs; tibial scopa compact, composed of moderately long to more or less short, coarse, simple, silver white hairs. Metasomal terga with 1st to 4th densely covered with short, fine, white or indistinctly yellowish hairs which are not conspicuous; caudal fimbria brownish; posterior margin of 1st metasomal tergum with lateral, those of 2nd and 3rd terga nearly complete or occasionally interrupted; that of 4th with complete fringes of white appressed hairs.

Structure: Process of labrum transverse, deeply emarginated or nearly bispinose apically; clypeus slightly convex, broadly nearly flat, weakly tessellate, strongly and somewhat coarsely punctate with punctures confluent in irregular longitudinal rows; facial fovea short, well indicated, broad above, separated from eye margin by a narrow punctate space; vertex rugoso-punctate; antennae with 3rd segment longer than 4th plus 5th; cheeks narrower than eyes seen in profile, rounded posteriorly, much receding below, shagreened with an indication of roughened punctures. Mesoscutum weakly tessellate, strongly and more or less coarsely punctate with punctures irregular in distribution; scutellum punctate about as in mesoscutum; propodeum short, enclosure well indicated, densely and irregularly wrinkled; mesopleuron coarsely sculptured with very close punctures; posterior spur of hind tibia widened basally. Metasoma slightly shiny, nearly smooth, very densely and more or less strongly punctate; punctures on 1st tergum slightly sparser and stronger than those on the following terga; posterior depressions of 2nd to 4th terga narrow, weakly indicated, densely punctate.

Male. Body length 9−11 mm.

Color: Clypeus except for a pair of blackish spots and lower halves of paraocular areas yellow; flagellum except for basal segment ferruginous beneath; metasoma black or occasionally apex of 1st tergum and full spaces of 2nd and 3rd terga red.

Pubescence: Hairs on head short, not specially dense, white or partly slightly yellowish. Hairs on thorax short to more or less long, somewhat dense, dull grey or slightly yellowish above, whitish below, without admixture of darker hairs; hairs on legs white to yellowish. Hairs on metasoma short, erect, fine, dense but not conspicuous, whitish; hairs on 6th tergum rarely brownish; posterior margins of 1st to 4th terga with white hair fringes not conspicuous as in female.

Structure: Process of labrum transverse, emarginate or nearly bispinose apically; clypeus slightly longitudinally convex, shiny, sparsely and more or less weakly punctate; antennae moderately

long with 3rd segment approximately twice as long as broad, about as long as or slightly shorter than 4th plus 5th; vertex rugoso-punctate; cheeks narrower than eyes seen in profile, much receding, nearly shagreened with an indication of weak punctures. Mesoscutum shiny, nearly smooth, distinctly and more or less densely to rather sparsely punctate with punctures; punctures on scutellum stronger than those on mesoscutum; propodeum coarsely sculptured with an indication of dense punctures; enclosure more or less well indicated, coarsely wrinkled. Metasomal terga smooth, shiny, distinctly and densely punctate with punctures slightly weaker than those on mesoscutum; punctures on 1st tergum sparser and slightly stronger than those on the following terga; posterior depressions of metasomal terga weakly indicated.

Remarks: It is separable by the clypeus braodly flat, strongly subrugoso-punctate, the pronotum with lateral lugullae, the mesoscutum and scutellum tessellate, strongly punctate with punctures irregular in distribution.

Specimens examined: [JELKU] JAPAN: Holotype female (Kyushu Univ.), Namari, Yuguchimura, Rikuchu, Honshu, Japan, 15.iv.1951 (M. Nakaya). [KEIU] KOREA: 1♀, JB Wanju Bongsilsan, 9.v.1997, MR Kim.

Floral records: Japan: *Trifolium patense* L., *Justicia procumbens* L..

Distribution: Korea (southern Korea); Japan (Hokkaido, Honshu, Kyushu, Tsushima); China (Beijing, Heilongjiang, Jilin, Qinghai Provs., Inner Mongolia Autn. Reg., Hebei, Xinjiang Uygur Autn. Reg.).

Region: Eastern Palaearctic.

Korea: JB.

Subgenus *Hoplandrena* Pérez, 1890

Hoplandrena Pérez, 1890: 170. TS: *Melitta trinunerana* Kirby, 1802.

24. *Andrena* (*Hoplandrena*) *dentata* Smith, 1879 (Pl. 8, Female: C; Male: D)
Ga-si-ae-kkot-beol

Andrena dentata Smith, 1879, Descr. New Spec. Hym., 51, Type: male; TL: Japan; TD: BM.
Andrena dentata: Kim, 1970: 659, 824 (first Korean record); Paek et al., 2010: 212.
Andrena (*Hoplandrena*) *dentata*: Tadauchi & Lee, 1992: 49 (Jejudo); ESK & KSAE, 1994: 266; Kim, 1996: 212; Tadauchi et al., 1997: 190 (Jejudo); Lee & Paik, 2003: 129.

Description: Based on the redescription by Hirashima (1964).

Female. Body length 12–13 mm.

Pubescence: Hairs on head and thorax short to more or less long, not dense, those on metasoma scanty. Hairs on clypeus short, sparse, whitish; those on frons, vertex and cheeks above near eyes fuscous; facial fovea blackish brown, paler beneath. Hairs on mesoscutum brownish to dark yellowish brown, paler anteriorly; dorsal fringe of propodeal corbicula with long, dense, white hairs;

tibial scopa large, composed of long hairs, more or less well arranged, somewhat coarse, simple hairs; tibial scopa brown, silver white in front. Hairs on 1st tergum and median base of 2nd long, nearly erect, soft, white; cilia on 2nd and the following terga brown; caudal fimbria deep brown or nearly fuscous; 3rd and 4th terga each with a complete, narrow band of short, appressed, white hairs.

Structure: Process of labrum short, condensed trapezoid, with apical margin entire; clypeus well convex, tessellate basally and laterally, broadly nearly smooth medially, coarsely and r strongly punctate with an indication of median, longitudinal, raised line; facial fovea broad but not well indicated; antennae with 3rd segment a little shorter than 4th plus 5th, which are longer than wide, respectively; cheeks slightly broader than eyes seen in profile, convex, receding below. Mesoscutum tessellate, especially strongly so anteriorly, sparsely and weakly punctate with punctures much weaker than those on clypeus; scutellum slightly convex, nearly smooth and shiny anteriorly, roughened posteriorly, more sparsely and weakly punctate than in mesoscutum; propodeal enclosure densely tessellate, narrowly nearly rugulose basally; posterior spurs of hind tibiae slightly curved. Metasomal terga densely tessellate, with an indication of very weak, sparse punctures, nearly dull or feebly shiny; posterior depressions of terga not well indicated, tessellate except apices.

Male. Body length 9–11 mm.

Pubescence: Hairs on head and thorax long and dense, those on metasoma short and scanty. Hairs on head white or dull white except for nearly black hairs on sides of face, frons and cheeks above; hairs on clypeus dense laterally. Hairs on thorax slightly yellowish to pale fulvous above, pale to white below; thorax nowhere mixed with brown to blackish hairs; hairs on legs white to golden, occasionally slightly brownish on fore and mid tibiae. Hairs on 1st and 2nd metasomal terga sparse, white; cilia on 2nd and the following terga slightly brownish; hairs on 6th terga yellowish brown; posterior margins of 2nd to 4th metasomal terga with short sparse white hairs not forming distinct fringes.

Structure: Mandibles long, slender, with sharp apices; malar space with long slender spine posteriorly which is about three-fourths times as long as base of mandible in spring form; process of labrum transverse, convex, smooth and shiny; clypeus with subapical portion strongly convex, smooth, shiny, with strong, sparse punctures; basal and lateral portions of clypeus densely tessellate-punctate with punctures weaker than those on median portion of clypeus; antennae elongate with 3rd segment as long as broad, 4th a little more than twice as long as broad, 5th and the following segments approximately twice as long as broad and slightly convex beneath; cheeks elongate and angled posteriorly. Pronotum thick with a sharp posterior edge; mesoscutum tessellate, densely so anteriorly, weakly so or nearly smooth medially, with sparse, weak punctures, weakly shiny; propodeal enclosure less coarsely sculptured than dorsal face of propodeum. Metasomal terga tesellate, with or without an indication of very weak punctures; posterior depressions of metasomal terga well indicated, nearly smooth.

Remarks: It is recognized by the entire process of labrum and coarsely punctate clypeus, reddish yellow to fuscous hairs on dorsum of thorax and the metasomal terga reddened partly. The color of hairs on the thorax is variable, which caused two synonymies (Xu and Tadauchi, 2005).

Specimens examined: [KEIU] KOREA: 1♂, GG Pocheon, 20.iv.1975, SB Kang; 1♀, GW Wonju Chiaksan, 5.v.1992, YH Park; 1♂, GW Teabaek Sodo-dong Chojeonchon Hambaeksan, 6.v.1999, SM Lyu; 1♀, CN Gongju Gyeryongsan Gapsa, 6.vi.1997, ES Lee. [QIAL] KOREA: 1♀, JN Nogodan, 26.v.1997, HS Lee; 1♀, GW Seolakdong, 26.v.2002, HS Lee; 1♀, GN Sindeungmyeon Yulgoksa,

14.v.2010, HS Lee; 1♀, GG Gwangju Siheomyangbongjang, 18.iv.1997, HS Lee; 1♀, GW Wonju-si Sinrimmyeon Sangnam-ri Chiaksan Sangwonsa, 26.v.2009, HS Lee; 2♀, GW Hoengseong-gun Cheongtaesanhyuyangrim, 22.v.2010, HS Lee; 1♀, GB Bonghwa-gun Cheongyangmyeon, 29.v.2010, HS Lee.

Floral records: Japan: *Brassica campestris*. China: *Malus* sp., *Pyrus* sp., *Brassica* sp., *Taraxacum* sp..

Distribution: Korea (southern to north Korea); Japan (Hokkaido, Honshu, Sado Is., Shikoku, Kyushu, Tsushima Is.); China (Shanghai, Jiangsu, Zhejiang, Shandong, Sichuan, Liaoning, Heilongjiang Provs.); Russia (Far east area).

Region: Eastern Palaearctic.

Korea: GG, GW, CN, GB.

25. *Andrena* (*Hoplandrena*) *macroceps* (Matsumura, 1912)
(Pl. 8, Female: E; Male: F)
Dam-saek-teol-ga-si-ae-kkot-beol

Melitta macroceps Matsumura, 1912, 4: 207, 208, Type: male, TL: Hokkaido, Japan, TD: JELKU.
Andrena (*Hoplandrena*) *macroceps*: Hirashima, 1964: 96−97 [redescription of holotype]; Tadauchi and Hirashima, 1984, Kontyu, 52: 285 [male, in key]; Gusenleitner & Schwarz, 2002: 447−448; Xu and Tadauchi, 2005: 21, 22, 38−39 [in key, in list]; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 106 [photos].

Description: Based on the description by Tadauchi and Hirashima (1987) and Hirashima (1964).

Female. Body length 12−14 mm.

Pubescence: Hairs on head and thorax fulvous; those on clypeus parse, short, those on vertex not mixed with brownish or blackish ones; facial fovea chocolate above, yellowish below; facial fovea with upper end occupying nearly full space between eye and post ocellus. Hairs on mesoscutum fulvous, short, those on mesoscutellum longer; propodeal corbicula with dorsal fringes of dense, not specially well arranged, fulvous hairs; interior of corbicula with coarse, simple hairs; tibial scopa compact, composed of moderately long, coarse, simple, dull whitish hairs nearly all over or narrowly pale brownish behind. Mmetasomal terga scanty of hairs, tergum 1 with long, erect, fulvous hairs; terga 3−5 with very short, sparse, suberect, fuscous hairs; apical margin of metasomal terga 2−4 with dense, appressed, white hair bands, band of 3 slightly interrupted in the middle, and that of 4 complete; caudal fimbria brown.

Structure: Process of labrum flat, transverse, more than twice as broad as long, with apical margin entire; clypeus well convex, tessellate on basal $^1/_5$, very weakly tessellate to nearly smooth apically with medium sized, close, more or less roughened punctures; clypeus with an indication of median, longitudinal, impunctate space; flagellar segment 1 shorter than 2 plus 3, 2 slightly shorter than 3; pronotum weakly tessellate with sparse, shallow punctures; pronotum with lateral suture indicated below, short, without humeral ridge; apical transverse groove of pronotum not notched in the middle; mesoscutum weakly tessellate with small, sparse, shallow punctures; propodeal enclosure rugose on basal half and tessellate on apical half. Metasomal terga densely tessellate, tergum 1 with small, indistinct punctures; apical depressions of metasomal terga narrow, very weak.

Male. Body length 9 mm.

Pubescence: Hairs on head (including clypeus) and thorax long, abundant, almost uniformly fulvous except for shorter brownish to fuscous hairs on sides of face, frons and cheeks above near eyes. Hairs on legs pale to distinctly yellowish, without admixture of darker hairs. Hairs on 1st tergum and median base of 2nd long, pale, those on the rest of 2nd and the following terga short to more or less long, bright brownish in some light; hairs on 6th metasomal terga long, not dense, bright yellowish; hairs on metasomal sterna rather fine, pale; posterior margins of 3rd to 5th metasomal sterna each with an indistinct fringe of sparse, suberect, whitish hairs which does not extend to sides of each sternum.

Structure: Mandibles long, slender, falciform; malar space with a spine beneath which is about three-fourths time as long as base of mandible; malar space evident, slightly less than one-half as long as base of mandible; process of labrum convex, transverse; clypeus well convex, more or less strongly punctate with punctures becoming stronger and sparser medially; antennae with 3rd segment as long as broad, 4th approximately twice as long as broad, 5th and the following segments about equal in length, indistinctly shorter than 4th, slightly to distinctly convex beneath; cheeks broader than eyes, angulate behind, its outline elongate and convergent posteriorly, tessellate, narrowly nearly smooth and very weakly punctate near eyes. Mesoscutum tessellate nearly all over, especially densely so or almost shagreened anteriorly, with weak and sparse punctures; propodeal enclosure slightly less coarsely sculptured than in dorsal face of propodeum. Metasoma distinctly tessellate, more evidently so than in *dentata*, nearly impunctate or with an indication of sparse, microscopical punctures; posterior depressions of 2nd to 5th metasomal terga nearly smooth, more or less well indicated.

Remarks: This species is very close to *Andrena dentata* Smith, but the first generation of this species is separated from *dentata* in female by the head and thorax with bright fulvous hairs and the vertex without brown hairs, and in male by the 2nd flagellar segment nearly as long as 3rd (2nd longer than 3rd in *dentata*). (Xu and Tadauchi, 2005).

Specimens examined: [KEIU] KOREA: 1♀1♂, GG Bukhansan Uiryeong, 6.v.1996, JD Yeo; 1♂, GG Dobongsan, 24.iv.1983, KYH; 1♀, GG Ui-dong, 25.vi.1972, MJ Joo; 1♀, Dobonggu Suraksan, 28.v.1999, GD Joo; 1♀, GG Bukhansanseong, 25.v.1997, JI Kim; 1♀, GG Cheonggyesan, 16.v.1982, YW Go; 1♀, GG Gangchon, 22.v.1977, SS Park; 1♀, GG Bogwangsa, 6.vii.1974, GH Nam; 1♀, GG Bogwangsa, 10.vi.1978, WJ Kim; 1♀, GG Bogwangsa, 2.v.1986, ISY; 1♀, GG Aengmubong, 13.v.1971, YC Kim; 1♀, GG Aengmubong, 9.v.1971, YH Lee; 1♀, GG Gwangreung, 13.v.1967, BH Kwon; 1♀, GG Gwangreung, 13.v.1967, BH So; 1♀, GG Gwangreung, 13.v.1967, JJ Kim; 1♀, GG Gwangreung, 21.v.1969, JI Kim; 1♀, GG Gwangreung, 14.v.1972, SH Lee; 2♀, GG Ganghwado Manisan, 28.iv.1996, HS Won; 1♂, GG Pocheon Backnsan, 10.v.1997, NH Kim; 1♀, GG Cheonmasan, 25.v.1962, WJ Kim; 1♀, GG Cheonmasan, 11.iv.1971, JI Kim; 1♀, GG Cheonggyesan, 19.iv.1972, JI Kim; 1♂, GG Pocheon Gangssibong, 2.v.1997, JD Yeo; 11♂, GG Chukryeongsan, 1.v.1997, ES Hong; 1♀, GG Pocheon, 22.vi.1972, SH Lee; 1♂, GG Pocheon Backnsan, 6.viii.1984, TY Moon; 1♀, GG Wangbangsan (Simgok-ri), 16.v.1982, BB Jeon; 1♀, GG Wangbangsan (Simgok-ri), 15.iv.1975, MG Lee; 1♀, GG Yongmunsa, 19.v.1973, HG Lee; 1♀, GG Yongmunsa, 28.v.1982, SG Sin; 1♀, GG Yongmunsa, 28.v.1982, HS Park; 1♀, GG Cheonmasan, 8.v.1998, YJ Byeon; 1♀, GW Gyebangsan, 5.vi.1983, MR Kim; 1♀, GW Hoengseong Balgyosan Bongpyeong-ri, 23.v.1998, JD Yeo; 1♂, GW Jeombongsan Ogari, 10.viii.1983, TY Moon; 1♀, GW Jeongseon Gariwangsan, 22.v.1998, JI Kim; 1♂, GW Jeongseon Gariwangsan, 27.v.1998, SM Ryu; 1♀, GW Inje Gachilbong, 31.v.1997, MR Kim; 2♀, GW Inje Gachilbong, 31.v.1997, JD Yeo; 2♀, GW Seolaksan Baekdamsa, 3−6.vi.1979, SH Jeong;

1♀, GW Seolaksan Baekdamsa, 3−6.vi.1979, HJ Park; 1♀, GW Seolaksan Baekdamsa, 3−6.vi.1979, SG Lee; 1♀, GW Seolaksan Baekdamsa, 3−6.vi.1979, SU Kim; 1♀, GW Seolaksan Baekdamsa, 3−6.vi.1979, MJ Moon; 1♀, GW Seolaksan Baekdamsa, 3−6.vi.1979, YJ Cha; 1♀, GW Teabaek Hambaeksan, 11.vii.1999, SM Lyu; 1♀1♂, GW Pyeongchang Bonpyeong Hoeryeongbong, 22.v.1998, MR Kim; 1♂, CB Goesan Joryeongsan, 18.v.1997, MR Kim; 1♂, CB Yeongwol Baedeoksan Gwaneumsa, 12.v.2001, SM Lyu; 1♀, CB Wolaksan, 29−31.v.1987, HJ Song; 1♀, CB Wolaksan, 30.v.1987, JI Lee; 1♀, CB Wolaksan, 30.v.1987, GS An; 1♀, CB Wolaksan, 30.v.1987, GJ In; 1♀, CB Wolaksan, 30.v.1987, JC Kim; 1♀, CN Gyeruongsan Gapsa, 26.v.1974, TH Jeong; 1♂, CN Gapsa, 6.vi.1997, EY Lee; 1♂, CN Hongseong Cheongryongsan, 3.v.1997, MR Kim; 1♀, GB Mungyeong Juheulsan, 25.v.1997, JI Kim; 2♀, GB Yeongju Samgari Sobaeksan Birosa, 5.v.1999, SM Lyu; 1♀, JB Wanju Bongsilsan, 9.v.1997, MR Kim; 1♀, JB Wanju Oknyeobong, 9.v.1997, MR Kim; 1♀, JB Muju Gucheon-dong, 21.v.1983, MR Kim; 1♀, JB Muju Gucheon-dong, 21.v.1983, JB Lee. [QIAL] KOREA: 1♀, GW Odaesan Bukdaesa, 8.vi.1995, JO Kim; 1♀, GN Jirisan Simwon, HS Lee; 1♀, GW Seolak-dong, 26.v.2002, HS Lee; 1♀, GG Suwon, 10.v.1996, HS Lee; 1♀, JJ Chujamyeon yongheung-ri Hachujado, 17.ix.2010, HS Lee; 1♀, GG Dobong-gu Uidong Uiryeonggii, 6.iv.2010, JC Jeong; 1♀, GW Hoengseong-gun Cheongtaesanhyuyangrim, 22.v.2010, HS Lee; GG Cheongryangsan, 22.v.1998. AY Jo; 1♂, GN Bonghwa-gun Cheongyangmyeon, 29.v.2010, HS Lee; 2♂, GN Sindeungmyeon Yulgoksa, 14.v.2010, HS Lee; 3♀, GW Sokcho-si Seolaksangukripgongwon Misiryeonghyugeso Sinseongbong, 1.iv−24.vi.2010, JC Jeong; 1♀, CN Seosansi Unsanmyeon, 26.v.2006, HS Lee; 2♀, JN Nogodan, 26.v.1997, HS Lee; 1♀, GW Odaesan, 25.v.2002, HS Lee; 2♀, GW Chuncheon Uiamdam, 23.v.2002, HS Lee; 1♀, GG Gwangju, 18.iv.1997, HS Lee.

Floral records: Japan: *Salix taraikensis* Kitamura; *Rubus crataegifolius* Bunge; *Cardamine leucantha* E. Schulz; *Trifolium repens* L..

Distribution: Korea (Central, Southern); Japan (Hokkaido).

Region: Eastern Palaearctic.

Korea: GG, GW, CB, CN, GB, JB.

26. *Andrena* (*Hoplandrena*) *miyamotoi* Hirashima, 1964
(Pl. 9, Female: A; Male: B)
Mi-ya-mo-do-ae-kkot-beol

Andrena (*Hoplandrena*) *miyamotoi* Hirashima, 1964, 13: 87, Type: male, TL: Kyushu, Japan, TD: JELKU [female & male].

Andrena (*Hoplandrena*) *miyamotoi*: Kim & Kim, 1983b: 71 (first Korean record); ESK & KSAE, 1994: 266; Kim, 1996: 212; Tadauchi et al., 1997: 200 (in list); Gusenleitner & Schwarz, 2002: 488; Lee & Paik, 2003: 129−130; Paek et al., 2010: 212.

Description: Based on the description by Hirashima (1964).

Female. Body length 11−12 mm.

Pubescence: Hairs on head and thorax not specially long and dense, those on metasoma scanty. Hairs on head whitish to pale except for brown or fuscous hairs on scapes, frons, vertex and cheeks above; hairs on clypeus sparse, downy, rather fine; facial fovea fuscous above, a little paler below. Hairs on mesoscutum predominantly fuscous or nearly black, pale ochreous anteriorly; hairs on

scutellum fuscous, paler laterally; dorsal fringe of propodeal corbicula long, dense, rather well arranged; tibial scopa compact, composed of moderately long, well arranged, more or less coarse hairs; tibial scopa silver white in front, brownish to fuscous above. Hairs on 1st metasomal terga long, sparse, pale; cilia on 2nd and the following terga brown to fuscous; caudal fimbria fuscous; posterior margins of 3rd and 4th terga each with a complete band of short, dense, appressed white hairs; posterior margins of 2nd terga with lateral fringes of similar hairs.

Structure: Process of labrum transverse with apical margin entire; clypeus well convex, tessellate, rather densely and more or less coarsely punctate with an indication of median, longitudinal, raised, impunctate line; antennae with 3rd segment shorter than next two segments together; 4th segment slightly longer than broad, 5th and the following segments slightly more elongate; facial fovea very broad but not sharply defined; cheeks slightly broader than eyes seen in profile, slightly convex above, receding below. Mesoscutum less tessellate than in *dentata*, irregularly punctate with punctures sparser than in *dentata*, with enamel-like lustre; scutellum shiny, very weakly punctate, roughened posteriorly; propodeal enclosure less coarsely sculptured than dorsal face of propodeum. Metasomal terga densely tessellate, without distinct punctures, weakly shiny; posterior depressions of terga weakly indicated, tessellate.

Male. Body length 9−10 mm.

Pubescence: Hairs on head and thorax long and dense, those on metasoma, except for haris on 1st and base of 2nd metasomal terga, much shorter and not so conspicuous. Hairs on head fuscous or nearly black except for sparse whitish ones on antennal regions, occiput and cheeks beneath; hairs on face including clypeus much longer and denser than in *dentata*. Hairs on thorax dull white mixed with fuscous or blackish hairs on mesoscutum, scutellum, metanotum and mesopleuron; rarely sparse fuscous hairs present on propodeum, and occasionally hairs on mesopleuron nearly all fuscous; hairs on legs white to fuscous. Hairs on 1st and median base of 2nd terga long, sparse, whitish; cilia on 3rd and the following terga brownish to nearly black; hairs on 5th and 6th terga nearly all black; posterior margins of 2nd to 4th terga with narrow fringes of short, sparse, white hairs; fringes of 3rd and 4th nearly complete; hairs on metasomal sterna brownish to brown.

Structure: Mandibles elongate, slender, with sharp apices; malar space evident, shiny, about one-fourth time as long as base of mandible; malar space with a long, sharp spine posteriorly, occasionally rudimental; process of labrum short, transverse, convex; clypeus not strongly convex medially, densely tessellate-punctate basally and laterally, nearly smooth and more strongly and sparsely punctate medially; antennae elongate with 3rd segment a little broader than long, 4th a little more than twice as long as broad, 5th and the following segments about twice as long as broad and slightly arched in front; cheeks much broader than eyes, angulate posteriorly. Mesoscutum tessellate, especially densely so anteriorly, sparsely punctate with punctures much weaker than those on median portion of clypeus and irregular in distribution; propodeal enclosure more or less well indicated, much less coarsely sculptured than dorsal face of propodeum. Metasoma elongate, shiny; metasomal terga tessellate or occasionally weakly so, almost impunctate; posterior depressions not wide, more or less well indicated, nearly smooth.

Remarks: This species is characterized by the mesoscutum covered with sparse, blackish hairs, scattered with weak punctures in female, and the clypeus with black hairs, the malar space with short spine, the hairs on mesoscutum whitish, mixed with sparse black ones, the clypeus densely tessellate, the subapical margin of pronotum not emarginated in the middle in male (Xu and Tadauchi, 2005).

Specimens examined: [JELKU] JAPAN: Holotype male and allotype female (Kyushu Univ.,

Fukuoka), Karuizawa, Honshu, Japan, 24.viii.1952, R. Ishikawa. [KEIU] KOREA: 1♀, JB Muju Gucheondong, 21.v.1983, SH Kim; 1♀, JB Muju Gucheon-dong, 21.v.1983, YJ Hong; 1♀, JB Muju Gucheon-dong, 22.v.1983, JS Choi; 1♀, GW Hyangrobong, 27.v.1968, JG Oh; 1♀, GW Chiaksan Guryongsa, 29.vii.1975, JI Kim; 1♀, GW Taebaek Mungok Danggol Taebaeksan, 6.v.1999.

Floral records: Not recorded.

Distribution: Korea (Central, Southern); Japan (Honshu, Sado Is., Shikoku, Kyushu); Russia (Far East Area).

Region: Eastern Palaearctic.

Korea: GW, JB.

27. *Andrena* (*Hoplandrena*) *nudigastroides* Yasumatsu, 1935
(Pl. 9, Female: C; Male: D)
Sa-kwa-ae-kkot-beol

Andrena (*Chlorandrena*) *nudigastra nudigastroides* Yasumatsu, 1935, Insects Jehol, (3)7: 40, Type: female, TL: China, TD: NHMS, Tokyo [female, China]; Yasumatsu, 1941, Peking nat. Hist. Bull., 15: 279 [in list].

Andrena (*Hoplandrena*) *pruniphora* Hirashima, 1964, J. Fac. Agr., Kyushu Univ., 13: 93−96 [female & male, Japan]; Hirashima, 1966, J. Fac. Agr., Kyushu Univ., 14: 100, 115 [female & male, in key]; Kim, 1970: 111, Encycl. Faun. & Fl. Korea, 11(3): 661 [Korea]; Tadauchi & Hirashima, 1984, Kontyu, 52: 284−285 [in key]; Tadauchi, 1989, A Check List of Jap. Insects, 684; Tadauchi et al., 1997, Esakia, (37): 200 [in list, Korea]; Tadauchi et al., 2001, Esakia, (41): [in URL]; Gusenleitner & Schwarz, 2002, Entomofauna, suppl., 12: 613−614.

Andrena (*Hoplandrena*) *nudigastroides*: Xu and Tadauchi, 2005, Esakia, (45): 21, 22, 37−38 [in key, in list]; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 108 [photos].

Andrena (*Hoplandrena*) *bimaculata* Xu [nec *Melitta bimaculata* Kirby, nec *Andrena bimaculata* Lepeletier] 1994, Sinozoologia, (11): 199−200 [female & male, China]; Gusenleitner & Schwarz, 2002, Entomofauna, suppl., 12: 613−614.

Andrena pruniphora Hirashima, 1964: 93; Kim, 1970: 661, 825 (first Korean record).

Andrena (*Hoplandrena*) *pruniphora*: ESK & KSAE, 1994: 266; Kim, 1996: 212; Tadauchi et al., 1997: 200 (in list).

Andrena (*Hoplandrena*) *nudigastroides*: Xu & Tadauchi, 2005: 37; Lee & Paik, 2003: 130; Paek et al., 2010: 212.

Andrena (*Hoplandrena*) *bimaculata* Xu [nec *Melitta bimaculata* Kirby, nec *Andrena bimaculata* Lepeletier] 1994, Sinozoologia, (11): 199−200 [female & male, China]; Gusenleitner & Schwarz, 2002, Entomofauna, suppl., 12: 613−614.

Description: Based on the redescription of Hirashima (1964).

Female. Body length 11−12 mm.

Pubescence: Hairs on clypeus and lower paraocular areas sparse, short, rather fine, pale or occasionally slightly brownish; hairs on antennal regions, occiput and cheeks pale to dirty fulvous; hairs on frons and vertex brown to fuscous in 1st generation, paler and nearly fulvous in 2nd; facial fovea nearly fuscous. Hairs on thorax bright fulvous (in fresh specimens) above, becoming whit-

ish toward underside of thorax, without admixture of darker ones on any portion; hairs on thorax more or less short on mesoscutum and longer on scutellum, metanotum, dorsal face of propodeum and mesopleuron; propodeum with dorsal fringe of long, dense, not specially well arranged, pale fulvous hairs; tibial scopa compact, composed of moderately long, coarse, simple hairs; tibial scopa silver white in front, fuscous behind. Hairs on disc of 1st tergum and median portion of 2nd long, erect, pale or fulvous in fresh specimens; hairs on 3rd and 4th metasomal terga not conspicuous, brownish to brown; caudal fimbria fuscous; posterior margin of 2nd metasomal tergum with an interrupted, those of 3rd and 4th terga each with an entire, more or less narrow band of short, dense, nearly appressed, white hairs.

Structure: Process of labrum flat, transverse, with apical margin entire; clypeus strongly convex, nearly smooth medially, rather coarsely punctate with an indication of median, longitudinal, wide, impunctate space; punctures on clypeus variable, more or less well separated to subcontiguous, moderate to occasionally strong; antennae with 3rd segment a little shorter than next two segments together; 4th segment approximately as long as broad, 5th a little longer than broad; facial fovea wide; vertex slightly convex in front view, shagreened; cheeks slightly broader than eyes seen in profile, slightly receding. Mesoscutum tessellate, especially densely so anteriorly and laterally, with rather sparse, not strong, rounded punctures; propodeal enclosure more finely sculptured than dorsal face of propodeum, narrowly wrinkled basally, densely tessellate elsewhere. Metasomal terga quite densely tessellate, with an indication of weak punctures; punctures on 1st tergum slightly stronger than those on 2nd and somewhat roughened; posterior depressions of terga narrow, very weak.

Male. Body length 9.5−10.5 mm.

Pubescence: Hairs on clypeus variable in color, uniformly nearly dull white or a little yellowish to rarely nearly all fuscous; in the former case, hairs on face, vertex, occiput and cheeks almost concolorous with those on clypeus, in the latter case, hairs on sides of face, frons, and cheeks near eyes fuscous. Hairs on mesoscutum short, sparse, slightly yellowish; hairs on scutellum and metanotum a little more yellowish than those on mesoscutum; frequently brown or fuscous hairs are intermixed on mesoscutum and scutellum; hairs on propodeum and mesopleuron whitish. Hairs on metasoma short and not conspicuous, those on 1st and base of 2nd terga slightly longer, white; hairs on 3rd and the following terga brownish to fuscous; posterior margin of 3rd and 4th metasomal terga each with a nearly complete band of short white hairs; similar hairs present on posterior margin of 2nd tergum laterally and occasionally further on posterior margin of 4th tergum.

Structure: Mandibles moderately long, not much elongate and not falciform as in *dentata* or *miyamotoi*; malar space a little less than one fourth time as long as base of mandible, not dentate but occasionally angulate beneath; process of labrum convex, shiny, transverse, with apical margin emarginate; clypeus well convex, tessellate or very weakly so, strongly punctate with punctures; antennae elongate, with 3rd segment as long as broad, 4th a little more than twice as long as broad, 5th and the following segments convex beneath, about twice as long as broad; cheeks about as broad as eyes seen in profile, rather receding, broadly nearly smooth. Mesoscutum tessellate, densely so anteriorly, occasionally nearly smooth subposteriorly, sparsely to sometimes more or less densely punctate with punctures; scutellum well convex, shiny and weakly punctate anteriorly, nearly roughened posteriorly; propodeal enclosure rugulose basally, weakly tessellate or nearly smooth apically. Metasoma shiny but not highly smooth, weakly and sparsely, occasionally somewhat densely punctate with punctures, more distinct than in saclzalimmis; posterior depressions of terga narrow and not sharply indicated.

Remarks: It is similar to *Andrena dentata* Smith, but can be separable from *dentata* by the 1st flagellar segment slightly shorter or as long as the next two segments (much shorter in *dentata*), the process of labrum slightly emarginate, the mesoscutum smooth and shiny medially and the metasomal terga weakly tessellate with fine punctures (Xu and Tadauchi, 2005). It is also very similar to *Andrena akitsushimae* Tadauchi et Hirashima from Japan, but is separable by the clypeus normaly convex, the subapical margin of pronotum entire, the mesoscutum weakly tessellate, weakly shiny, the metasomal terga weakly tesslate.

Specimens examined: [KEIU] KOREA: 1♂, GG Cheonggyesan, 16.iv.1978, CS Oh; 1♀, GG Cheonggyesan, 17.v.1993, KSH; 1♀, GG Aengmubong, 9.vi.1976, SB Baek; 1♀, GG Yongmunsa, 28.v.1982, SA Bae; 1♀, GG Cheonmasan, 25.v.1962, wo; 2♀, GG Pocheon Wangbangsan, 23.v.1976, HS Sim; 1♀, GG Pocheon Yeompyeong-ri Cherokee val., 21.vii.1996, JI Kim; 1♀, GG Chukryeongsan, 24.viii.1999, MR Kim; 1♀, GG Chukryeongsan, 1.v.1999, PG Lee; 1♀, GG Chukryeongsan, 1.v.1999, HG Kim; 1♀, CB Wolaksan, 28−31.v.1987, SH Baek; 1♀, CN Hongseong Cheongryongsan, 3.v.1997, MR Kim; 1♀, JB Muju Gucheon-dong, 21.v.1983, JS Choi. [QIAL] KOREA: 1♀, GG Geumcheon-gu Siheungdong Gwanaksan, 4.v.2013, 2♀, GG Anyang Manan-gu, 10.iv.2002, HS Lee; 1♀, GG Gwanghwado, 2.v.2000, HS Lee; 1♀, CB Danyang-gun, 16.v.1997, HS Lee; 1♀, GG Suwon, 28.iv.1998, HS Lee; 1♀, GG Yonginsi-Baekammyeon Hantaeksikmulwon, 18.iv.2002, YB Lee; 1♀, GG Gunposi Suridong Surisan, 17.iv.2005, HS Lee; 2♀, GG Gwangak, 2.v.2010, HS Lee; 1♀, GG Yangpyeong-Gun Yangseomyeon, 2.vi.2007, SW Park.

Floral records: Japan: *Picris japonica* D. Don.; *Prunus armeniaca* L. var. *ansu* Maxim.; *Brassica campestris* L.; *Malus pumila* Mill. var. *dulcissima* Koidz.

Distribution: Korea (Southern, Central); Japan (Honshu); China (Beijing, Hebei Prov.).

Region: Eastern Palaearctic.

Korea: GG, CB, CN, JB.

28. *Andrena* (*Hoplandrena*) *rosae alfkeni* Friese, 1914 (Pl. 9, Female: E; Male: F)
Ae-kkot-beol

Andrena rosae var. *alfkeni* Friese, 1914, Stett. ent. Zeit, 75: 228, Type: female, TL: M. Siberia, Russia, TD: ZMHB [female].

Andrena florea sachalinensis Yasumatsu, 1939: 66−68. Type: female; TL: China; TD: JELKU.

Andrena florea sachalinensis: Kim, 1970: 658, 824 [first record in Korea]; ESK & KSAE, 1994: 266; Kim, 1996: 215.

Andrena (*Hoplandrena*) *rosae alfkeni*: Tadauchi et al., 1997, (37): 200 [in list]; Lee & Paik, 2003: 130.

Andrena (*Hoplandrena*) *sachalinensis*: Hirashima, 1964, J. Fac. Agr., Kyushu Univ., 13: 91−93.

Andrena rosae Panzer, 1801, 74: 10; Paek et al., 2010: 212.

Description: Based on the description of *A. sachalinensis* by Hirashima (1964).

Female. Body length 11−12.5 mm.

Color: Metasoma with apical half of 1st tergum and 2nd and 3rd terga entirely or broadly red in 1st generation, more broadly blackened in 2nd.

Pubescence: Hairs on head short, not specially dense, those on thorax short to more or less long, somewhat sparse above, those on metasoma short and very scanty. Hairs on clypeus pale, mixed

with sparse pale brownish ones; hairs on frons, vertex and cheeks near eyes nearly fuscous; facial fovea nearly fuscous, obscurely paler below. Hairs on mesoscutum predominantly nearly fuscous, narrowly pale anteriorly; hairs on scutellum fuscous, paler laterally; propodeum with rather dense whitish hairs forming dense, not well arranged fringe of corbicula laterally; tibial scopa rather well developed, composed of moderately long, well arranged, somewhat coarse simple hairs which are narrowly silver white in front, broadly nearly fuscous posteriorly. Hairs on 1st tergum sparse, long, white; cilia on 2nd tergum very sparse, pale those on the following terga pale to brown; caudal fimbria scanty, fuscous; posterior margins of 3rd and 4th terga each with a complete band of short, appressed, pure white hairs; 2nd tergum without any fringe of such hairs.

Structure: Process of labrum large, transverse, with apical margin nearly entire; clypeus well convex, densely rugoso-punctate tessellate above and laterally, with a median, longitudinal, raised, impunctate, space; antennae with 3rd segment approximately as long as next two segment together; 4th segment about as long as broad, 5th and the following segments longer than broad; cheeks rounded, not much exceeding, about as broad as eyes seen in profile. Mesoscutum tessellate, especially so anteriorly, weakly shiny, with rather weak, somewhat roughened, sparse punctures which are irregular in distribution; propodeal enclosured not sharply indicated, less strongly sculptured than dorsal face of propodeum, rugulose basally, weakly tessellate apically. Metasomal terga densely tessellate, with an indication of very weak, sparse punctures; posterior depressions of terga rather narrow, slightly indicated, weakly tessellate and impunctate.

Male. Body length 10 mm.

Color: Metasoma not at all black, obscurely to distinctly piteous, or occasionally partly reddened.

Pubescence: Hairs on head abundant but not specially long; hairs on clypeus, sides of face, frons, vertex, cheeks near eyes nearly fuscous; those on the rest of head dull grayish white. Hairs on thorax above not specially dense, dull white, mixed with brownish or fuscous ones on mesoscutum and scutellum. Hairs on metasoma short, sparse; those on 1st and base of 2nd terga whitish, those on the rest of 2nd and the following terga brownish fuscous; posterior margins of 3rd and 4th metasomal terga each with a sparse fringe of short white hairs not well arranged in compact fringes.

Structure: Malar space not dentate or sometimes angulate beneath, about one-fourth time as long as base of mandible; process of labrum short, transversely convex; clypeus well convex, densely and more or less strongly rugoso-punctate, weakly shiny medially; antennae elongate, with 3rd segment about as long as broad, 4th and the following segments a little less than twice as long as broad; 5th segment slightly, and the following segments distinctly convex beneath; cheeks about as broad as eyes, rather receding, very weakly punctate. Mesoscutum almost smooth subposteriorly, tessellate elsewhere, sparsely punctate with punctures round, shallow, irregular in distribution; propodeal enclosure much more finely sculptured than dorsal face of propodeum, rugulose basally. Metasoma elongate, shiny; metasomal terga nearly smooth, with very weak, not dense punctures; posterior depressions of terga not sharply indicated.

Remarks: This species is easily recognized by the metasomal terga ferruginous in part, the 2nd metasomal tergum without hair fringe apically, the hairs on supra-antennal area, vertex, cheeks above near eyes and mesoscutum nearly fuscous (Xu and Tadauchi, 2005).

Specimens examined: [QLAL] KOREA: 1♀, Mt. Odaesan, Jinbu Pyeongchang GW, 30.v.1996, Lee HS.

Floral records: Japan: *Taraxacum officinale*, China: *Taraxacum* sp..

Distribution: Korea (Central); China (Heilongjiang, Liaoning, Hebei Provs.); Japan (Hokkaido); Russia (Far East area); Mongolia.
Region: Eastern Palaearctic.
Korea: GW.

Subgenus *Larandrena* LaBerge, 1964

Larandrena LaBerge, 1964: 304−305; TS: *Andrena miserabilis* Cresson, 1872.

29. *Andrena* (*Larandrena*) *ventralis* Imhoff, 1832 (Pl. 10, Female: A; Male: B)
I-reun-bom-ae-kkot-beol

Andrena ventralis Imhoff, 1932, Isis (Oken) Jena: 1206−1207, Type: female, TL: Switzerland; TD: BMNH [female & male].
Andrena (*Larandrena*) *ventralis*: Tadauchi et al., 2001, Esakia, (41): [in URL]; Gusenleitner & Schwarz, 2002, Entomofauna, (Suppl. 12): 810−812; Xu and Tadauchi, J. Fac. Agr., Kyushu Univ., 50: 396; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 111 [photos].
Andrena rufiventris Eversmann, 1852 (nec *Andrena rufiventris* Lepeletier, 1841), Bull. Soc. Nat. Moscou, 25: 32 [E-European Russia].
Andrena mutabilis Morawitz, 1866 (nec *Andrena mutabilis* Pérez, 1895), Hor. Soc. Ent. Ross., 4: 18 [new name for *Andrena rufiventris* Eversmann, 1852].
Andrena (*Larandrena*) *fukuiana* Hirashima et Haneda, 1973: 72−73 [female & male, Japan]; Tadauchi, 1989, A Check List of Jap. Insects, 684; Lee et al., 2002; Paek et al., 2010: 213.

Description: Based on the description of *A. fukuiana* by Hirashima (1973).
Female. Body length 9 mm.
Pubescence: Hairs dull white; facial fovea only slightly brownish above (paler than in *echizenia*). Tibial scopa white with hairs on outer face slightly denser and longer, paler in color (nearly all white) than in *echizenia*; hairs on hind tarsi primarily whitish. Metasomal terga with white hair bands on 2nd to 4th terga, which are broadly interrupted on 2nd and slightly so on 3rd, broad, appressed, 4th tergum obscure or interrupted in the middle; caudal fimbria only slightly brownish in the middle.
Structure: Process of labrum triangular, shiny, much smaller (although triangular in shape) than in *echizenia*; clypeus well convex, with median portion smooth, impunctate and shiny, more broadly smooth in the middle than in *echizenia*. Mesoscutum finely granular, more broadly smooth (especially posterior portion) than in *echizenia*; mesoscutum with punctures not distinct; scutellum broadly smooth, shiny, with scattered punctures; propodeal enclosure granular with basal portion weakly and irregularly wrinkled, less wrinkled than in *echizenia*. Metasomal terga finely tessellate, impunctate, weakly shiny.
Male. Body length 8 mm.
Color: Black; clypeus nearly pale yellow with a pair of small black dots at sides; Underside of

flagellum except for 1st segment broadly pale yellowish brown (only slightly brownish in *echizenia*).

Pubescence: Hairs on head white, not mixed with black ones. Metasomal terga scanty of hairs.

Structure: Mandibles falciform, but not specially long, weakly bidentate; process of labrum large, transverse, smooth and shiny; clypeus transverse, nearly flat and shiny, with weak punctures; cheeks strongly constricted as seen from above, broad as seen in profile, finely granular; 1st segment of flagellum much longer than broad, longer than next segment which is approximately as long as broad; 3rd and the following segments longer than broad, respectively. Sculpture of thorax similar to female but scutellum nearly entirely smooth and shiny (nearly posterior half of scutellum finely granular and dull in *echizenia*); apical portion of 6th sternum distinctly reflexed.

Remarks: This species is very similar to *A. echizenia* Hirashima et Haneda, but it can be separated from *echizenia* by the smaller size, the female clypeus broadly smooth in the middle, the propodeal enclosure less wrinkled basally and the male 6th sternum distinctly reflexed apically.

Specimens examined: [QIAL] KOREA: 2♀, COA, Suwon GG, 15.iv.1997, Lee HS; 2♀2♂, COAL, Suwon GG, 29.iv.2001, Lee HS; 1♂, Suwon GG, 28.iv.1998, Lee HS; 4♀, COA, Suwon GG, 5.iv.1996, Lee HS; 1♀, Suwon GG, 4.iv.1998, Lee HS; 1♀, Mt. Jonghyeonsan, Yeoncheon GG, 14.vii.2000, Park SW.

Floral records: *Rhododendron* sp.. Japan: *Salix* spp..

Distribution: Korea (Central); Japan (Honshu); China (Beijing, Shandong Prov.); middle to south Europe; European Russia; Turkey; Central Asia.

Region: Eastern Palaearctic.

Korea: GG.

Subgenus *Leucandrena* Hedicke, 1933

Leucandrena Hedicke, 1933: 215. TS: *Melitta barbilabris* Kirby, 1802 (=*Apis sericea* Christ, 1791, nec Förster, 1771), by original designation.

30. *Andrena* (*Leucandrena*) *delicatula* Cockerell, 1918 (Pl. 10, Female: C)
Gin-sol-ae-kkot-beol

Andrena delicatula Cockerell, 1918, Ann. Mag. nat. Hist., (9), 2: 481 (China). Type: male; TL: China; TD: USNM.

Andrena (*Simandrena*) *koma* Hirashima, 1952: 32−33, Type: female, TL: Korea; TD: JELKU (first record in Korea); Kim, 1970: 824; Tadauchi et Lee, 1992: 51; ESK & KSAE, 1994: 266; Kim, 1996: 214. (Syn. by Xu & Tadauchi, 1997).

Andrena (*Leucandrena*) *delicatula*: Xu & Tadauchi, 1997, (37): 180−181; Tadauchi et al., 1997, (37): 191 (Jejudo); Lee & Paik, 2003: 130−131; Paek et al., 2010: 212.

Description: Based on the description of Hirashima (1952) and Xu and Tadauchi (1997).

Female. Body length 9 mm.

Pubescence: Hairs on head whitish. Hairs on thorax pale fulvous, those on propodeal corbicula slightly yellowish; tibial scopa silvery white, faintly brownish above basally, somposed of moderately long compact hairs. Metasoma with a narrow appressed band of dense white hairs on terga 3−4; caudal fimbria pale yellowish brown.

Structure: Process of labrum broad, apical margin weakly emarginate; clypeus well convex, weakly tessellate, shiny, sparsely punctate with a median impunctate line; antennae with flagellar segment 1 as long as segments 2 + 3; Mesoscutum tessellate, feebly shiny with small and sparse punctures centrally, the rest portion coarsely granular, dull, with rather dense punctures; scutellum shiny, sparsely punctate anteriorly; propodeal enclosure granular, dull. Metasoma shiny, tessellate-punctate, punctures being sparse and minute, but punctures on the bases of terga 2−3 more or less dense.

Male. Body length 8 mm.

Pubescence: Hairs on head and thorax abundant, white to pale yellowish; those on clypeus long, dense, white; those on antennal area mixed with bright brown; those on vertex dull whitish; those on cheeks white mixed with bright brown. Hairs on thorax dull whitish; legs with white hairs. Hairs on metasomal terga short and sparse, those on tergum 1 whitish at basal area; T2−4 with white hair bands lateroapically; sterna 2−5 with not well-formed subapical fimbriae.

Structure: Process of labrum moderate, broad and short, entire at apex; clypeus convex medially, surface densely shagreening with coarse punctures; antennae with flagellar segment 1 about as long as flagellar segments 2 which is longer than broad; vertex densely tessellate to roughened; cheeks broader than eye seen in profile, surface densely tessellate with obscure punctures. Pronotum with distinct humeral angle and ridge, lateral surface with slanting rugulae behind ridge, the rest part densely tessellate; mesoscutum finely shagreened; scutellum finely tessellate anteriorly, densely tessellate posteriorly; propodeal enclosure roughened with transverse rugulae apically; dorsal face roughened, but weaker than in enclosure. Metasomal terga weakly tessellate, shiny with microscopic fine punctures; posterior depressions of terga well indicated; fraud pygidial plate appearing; sterna 2−5 smooth and shiny, nearly impunctate.

Remarks: This species can be separated from *Andrena melanospila* Cockerell by the more tessellated clypeus, the broader process of labrum and the rugulosed propodeal enclosure basally in both sexes. The female is distinctive in having the well developed tibial scopa, the smoother propodeal enclosure and the tessellated metasomal terga.

Specimens examined: [JELKU] KOREA: 7♀, JJ Kwangpyong-ri, Namjeju-gun, 23.iv.1997, O. Tadauchi; 17♀, Pijarim Forests, Pukcheju-gun, 24.iv.1997, O. Tadauchi; 11♀, Schwa Beach, Pukcheju-gun, 25.iv.1997, O. Tadauchi; 3♀, Chonjiyen, Waterfall, Sogwipo-shi, 25.iv.1997, O. Tadauchi; 2♀, Shinsan-ri, Namjeju-gun, 25.iv.1997, O. Tadauchi; 4♀, Mt. Halla, 300 m, Haean-dong, 26.iv.1997, O. Tadauchi; 4♀, ditto, J-c. Paik; 1♀, Sam Jeong Li, Ma Cheong Meon, Hamyang Gun GN, 15.v.1991, K. Morimoto; 1♀, San Lyong Li, San Nae Meon, Nam Weon Gun JB, 15.v.1991 (Malaise trap); 3♀, Kang Nung, Pochon Gun GG, 24.iv.1992, O. Tadauchi; 1♀, Boung Myong Li, Dong San Meon, Chun Chon Gun GW, 26.iv.1992, T. Saigusa. [KEIU] KOREA: 1♀, GG Dobongsan, 24.iv.1993, MA Lee; 1♀, GG Surisan, 14.v.1978, SJ Kang; 1♀, GG Aengmubong, 9.v.1976, SB Park; 1♀, GG Aengmubong, 9.v.1976, WD Han; 1♀, GG Aengmubong, 17.iv.1983, YM Go; 1♀, GG Aengmubong, 17.iv.1983, CY Yoon; 1♀, GG Aengmubong, 9.v.1976, SB Park; 1♀, GG Bogwangsa, 17.iv.1983, MR Kim; 1♀, JB Muju Gucheon-dong, 21.v.1983, MR Kim; 1♀, JJ Jungmun, 3.v.1978, JU Lee; 2♀, JJ

Jungmun, 3.v.1978, SH Nam.

Floral records: Korea: *Rhododendron* sp.; *Sagina juponica*, *Brassica campestris*; *Calendula arvensis*; *Prunus donarium* var. *spontanea*; *Prunus persica*; *Lactuca debilis*.

Distribution: Korea (Central, Southern, Jeju); China (Jiangsu, Shanghai, Zhejiang Provs.).

Region: Eastern Palaearctic.

Korea: GG, GW, JB, GN, JJ.

31. *Andrena* (*Leucandrena*) *richardsi* Hirashima, 1957
(Pl. 10, Female: D; Male: E)
Ri-cha-d-ae-kkot-beol

Andrena richardsi Hirashima, 1965, 30: 482, Type:male; TL: Kyushu, Japan; TD: JELKU.
Andrena richardsi: Kim, 1970: 825 (first Korean record).
Andrena (*Leucandrena*) *richardsi*: Tadauchi, 1989, 684; Tadauchi & Lee, 1992, (32): 54.
Andrena (*Notandrena*) *richardsi*: ESK & KSAE, 1994: 266; Kim, 1996: 213; Tadauchi et al., 1997: 200 (in list).
Andrena (*Rhaphadrena*) *richardsi*: Lee & Paik, 2003: 133; Paek et al., 2010: 213.

Description: Based on the redescription by Hirashima (1965).

Female. Body length 11 mm.

Pubescence: Hairs on head basically greyish white, not abundant; facial fovea slightly brownish above, silvery beneath. Hairs on mesoscutum short, sparse, yellowish; hairs on posterior margin of scutellum, metanotum and propodeum long, rather sparse, yellowish grey; propodeal corbicula with dorsal fringe not arranged in a compact fringe, interior with sparse coarse hairs; tibial scopa compact, silvery in front, slightly yellowish behind. Metasoma scanty of hairs, with very fine, sparse pubescence; posterior margins of 2nd to 4th metasomal terga with lateral white hairs; caudal fimbria golden.

Structure: Process of labrum rather small with apical margin rounded; clypeus not well convex, shiny medially with irregular punctures; 3rd antennal segment about equal to 4th plus 5th, cheeks slightly rounded above. Mesoscutum nearly smooth medially, with weak, sparse punctures; scutellum nearly as in mesoscutum; propodeal enclosure well defined, strongly wrinkled all over; hind tibiae rather elongate. Metasoma smooth basally, with microscopical reticulation becomes clear toward apical terga; 1st tergum impunctate, 2nd and the following terga with microscopical punctures.

Male. Body length 9−10 mm.

Pubescence: Head and thorax with long, not dense, dull greyish hairs, those on sides of clypeus white and those on thorax above slightly yellowish. Metasoma with sparse hairs; posterior margins of 2nd to 4th terga with lateral hair bands inconspicuous; 3rd to 5th metasomal sterna with apical fringes of curled golden hairs.

Structure: Clypeus rather flat, nearly smooth medially, weakly and sparsely punctate; antennae somewhat long, 3rd segment one and one-half times as long as wide, much longer than 4th; cheeks distinctly depressed, rather elongate behind. Mesoscutum nearly smooth and shiny medially, weakly punctate; propodeum and mesopleuron coarsely sculptured; propodeal enclosure wrinkled

all over, with wrinkles not so strong as in female. Metasoma nearly smooth and shiny, with very fine punctures; posterior depressions of terga weak.

Remarks: This species is easily separated from other species by the strongly wrinkled propodeal. enclosure.

Specimens examined: [JELKU] KOREA: 7♀, JJ Kwangpyong-ri, Namjeju-gun, 23.iv.1997, O. Tadauchi; 17♀, Pijarim Forests, Pukcheju-gun, 24.iv.1997, O. Tadauchi; 11♀, Schwa Beach, Pukcheju-gun, 25.iv.1997, O. Tadauchi; 3♀, Chonjiyen, Waterfall, Sogwipo-shi, 25.iv.1997, O. Tadauchi; 2♀, Shinsan-ri, Namjeju-gun, 25.iv.1997, O. Tadauchi; 4♀, Mt. Halla, 300 m, Haean-dong, 26.iv.1997, O. Tadauchi; 4♀, ditto, J-c. Paik; 1♀, Sam Jeong Li, Ma Cheong Meon, Hamyang Gun GN, 15.v.1991, K. Morimoto; 1♀, San Lyong Li, San Nae Meon, Nam Weon Gun JB, 15.v.1991 (Malaise trap); 3♀, Gwang Nung, Pochon Gun GG, 24.iv.1992, O. Tadauchi. 1♀, Boung Myong Li, Dong San Meon, Chun Chon Gun GW, 26.iv.1992, T. Saigusa. [KEIU] KOREA: 1♂, GG Dobongsan, 22.v.1974, YM An; 1♂, GG Cheonmasan, 29.v.1982, HY Jung; 1♂, GG Cheonmasan, 7.vi.1974, IT Oh; 1♂, CB Wolaksan, 30.v.1987, BH Kim; 2♂, CN Gyeruongsan Gapsa, 26.v.1974, JH Kwon; 6♂, CN Gyeruongsan Gapsa, 26.v.1974, GS Son; 1♂, CN Gyeruongsan Gapsa, 26.v.1974, CH Sin; 1♂, CN Gyeruongsan Gapsa, 26.v.1974, DJ Sim; 1♂, CN Gyeruongsan Gapsa, 26.v.1974, WD Han; 2♂, CN Gyeruongsan Gapsa, 26.v.1974, MH Cha; 1♂, CN Gyeruongsan Gapsa, 26.v.1974, GJ Mun; 1♂, CN Gyeruongsan Gapsa, 26.v.1974, IH Lee; 1♂, CN Gyeruongsan Gapsa, 26.v.1974, YY Lee.

Floral records: Japan: *Ilex* sp..

Distribution: Korea (Central, Southern, Jeju); Japan (Honshu, Shikoku, Kyushu, Yakushima).

Region: Eastern Palaearctic.

Korea: GG, GW, CB, CN, JB, JJ.

Subgenus *Melandrena* Perez, 1890

Melandrena, Perez, 1890: 170. TS: *Apis thoracica* Fabricius, 1775, by subsequent designation of Michener, 1997: 36.

Gymnandrena Hedicke, 1933: 212. TS: *Apis thoracica* Fabricius, 1775, by original desination.

32. *Andrena* (*Melandrena*) *crassepunctata* Cockerell, 1931
(Pl. 11, Female: A; Male: B)
Sal-jjak-gom-bo-ae-kkot-beol

Andrena crassepunctata Cockerell, 1931, (446): 10, Type: female; TL: China; TD: USNM.

Andrena crassepunctata: Kim, 1970: 659 (first Korean record).

Andrena (*Gymnandrena*) *crassepunctata*: Hirashima, 1957: 63 (first Korean record).

Andrena (*Gymnandrena*) *crassepunctata* [sic]: Kim et al., 1990: 2; ESK & KSAE, 1994: 266; Kim, 1996: 211.

Andrena (*Melandrena*) *crassepunctata*: Tadauchi et al., 1997, (37): 191 (in list); Lee & Paik, 2003: 131; Xu and Tadauchi, 2009, J. Fac. Agr., Kyushu Univ., 54: 114.

Andrena crasspunctator [sic]: Paek et al., 2010: 212.

Description: Based on redescription of Xu and Tadauchi (female, 1997).

Female. Body length 13 mm.

Pubescence: Hairs on head and thorax dense, those on clypeus, antennal region, vertex and cheeks black, facial fovea brown. Hairs on thorax fulvous; those on mesepisternum black below, yellow above; propodeal corbicula well developed with dense hairs, brown with internal simple hairs; tibial scopal hairs long, simple, brown. Hairs on metasomal terga scanty, without hair bands; caudal fimbria black; sterna 2–5 with complete black subapical fimbriae.

Structure: Process of labrum trapezoidal, large, entire apically; clypeus well convex, surface with rugoso-punctate, with median longitudinal impunctate space; antennae with flagellar segment 1 slightly shorter than flagellar segment 2 plus 3. Facial fovea deep, separated from inner margin of eye by broad punctate space; cheeks broader than eye, surface densely tessellate posteriorly, smooth and shiny with sparse punctures near eye. Mesoscutum and scutellum dulled by coarse tessellation with punctures; propbdeal enclosure wrinkled at basal half, densely tessellate apically. Metasomal terga weakly tessellate, feebly shiny; pygidial plate large, U-shaped, with raised triangular area.

Male. Not available.

Remarks: It is similar to *Andrena thoracica sinensis* Cockerell, but separated by the process of labrum entire, the clypeus with tessellate longitudinal impunctate space and the 1st flagellar segment shorter than the flagellar segment 2 plus 3.

Specimens examined: [JELKU] KOREA: 1♀, JJ Sehwa Beach, Pukcheju-gun, 25.iv.1997, Tadauchi; 1♀, Suigen, 19.iv.1924, K. Sato. [KEIU] KOREA: 1♀, GG Aengmubong, 17.iv.1983, YB Jeong; 1♀, GG Aengmubong, 17.iv.1983, MS Kim; 1♀, GG Aengmubong, 12.iv.1981, GW Yoon; 1♀, GG Aengmubong, 1.v.1984, SY Hwang; 1♀, GG Cheonmasan, 10.v.1986, SJ Cho; 1♀, GG Cheonmasan, 12.v.1991, SDY; 1♀, JB Muju Gucheon-dong, 8.iv.1972, JH Yoo. [QIAL] KOREA: 1♀, GG Anyangsumokwon, 11.iv.1999, HT Kim; 1♀, JN Jirisan Piagol, 22.v.1999, HT Kim; 1♀, GW Hongcheon-gun Baekhwasan, 24.v.2002, HS Lee; 1♀, GW Yongpyeong, 23.vi.1996, HS Lee; 1♀, JN Sinan-gun Uido, 17.v.2006, MK Paek; 1♀, GG Dobonggu Uidong Uiryeonggii, 8.iv.2010, HS Lee.

Floral records: Korea: *Brassica campestris*.

Distribution: Korea (Central, Southern, Jeju); Japan (Honshu); China (Beijing, Shanghai, Jiangsu, Zhejiang Provs., north east Provinces).

Region: Eastern Palaearctic.

Korea: GG, GW, JN, JB, JJ.

33. *Andrena* (*Melandrena*) *koreana* Hirashima, 1952 (Pl. 11, Female: C)
Go-ryeo-ae-kkot-beol

Andrena (*Gymnandrena*) *koreana* Hirashima, 1952, 24: 29–30, Type: female, TL: Korea, TD: JELKU.

Andrena (*Gymnandrena*) *koreana*: Hirashima, 1957: 64; Kim, 1970: 659, 824; Kim et al., 1990: 3 (Jejudo); ESK & KSAE, 1994: 266; Kim, 1996: 211.

Andrena (*Melandrena*) *koreana*: Tadauchi et al., 1997, (37): 192; Lee & Paik, 2003: 131; Paek et al., 2010: 212.

Description: Based on the description by Hirashima (1952) and Tadauchi et al. (1997).

Female. Body length 13.5 mm.

Pubescence: Hairs on head short to more or less long, pale fulvous on clypeus, lower sides of face, and darker on antennal regions, blackish on vertex; facial fovea blackish above. Hairs on thorax long and dense, fulvous above, becoming paler beneath; dorsal fringes of propodeal corbicula long, dense, pale fulvous; tibial scopa dense, composed of rather short, coarse, blackish hairs. Metasoma with conspicuous appressed white hair bands; caudal fimbria black.

Structure: Process of labrum large, truncate, very weakly thickened at tip; clypeus coarsely rugoso-punctate, the interspaces feebly shiny; facial fovea with upper end occupying about $^3/_4$ the length of ocellocular line, fovea separated from eye margin by a wide punctate space; antennae with 3rd segment about equal to 4th plus 5th; Mesoscutum densely and more or less strongly punctate with punctures except for central portion; propodeal enclosure rather coarsely wrinkled basally. Metasoma shiny and distinctly punctate; 1st tergum deeply but sparsely punctate, 2nd and 3rd terga with smaller but closer punctures; pygidial plate rounded at apex with a median triangle rugose.

Male. Body length 9–10 mm.

Pubescence: Hairs on head not so dense, pale yellowish to dull whitish; those on cheeks sparse near eye, longer and denser posteriorly. Hairs on thorax dense, pale yellowish; those on legs short, yellowish except inner surface of basitarsi yellowish brown. Hairs on metasomal terga scanty, those on T1–4 short, sparse at lateral margins, whitish; those on T5–6 brown; T2–4 without hair band; S2–5 with not well-formed subapical fimbriae, whitish.

Structure: Vertex weakly roughened by coarse tessellation and punctuation; clypeus well convex, surface weakly roughened by reticular tessellation; process of labrum moderate, trapezoidal, slightly and broadly emarginate apically, shiny; cheeks broader than eye. Pronotum without humeral angle and ridge, surface tessellate with sparse punctures; mesoscutum strongly tessellate mostly, weakly tessellate medially; propodeal enclosure narrow, triangular, rugosed at basal half, densely tessellate apically; dorsal face strongly rugosed with coarse punctation; lateral face rugosed above, densely tessellate below. Metasomal terga smooth and shiny; posterior depressions of terga not well indicated. S2–5 finely tessellate, feebly shiny with obscure punctures.

Remarks: This species is distinctive in having the metasomal terga densely punctate with moderate punctures and with very conspicuous hair bands and the pygidial plate U-shaped.

Specimens examined: [JELKU] KOREA: Holotype female (Kyushu Univ.), Koryo, Korea, 9.v.1937, T. Kasanagi; 8♀1♂, Pijarim Forests, Pukcheju-gun, 24.iv.1997, O. Tadauchi; 1♂, Pijarim Forests, Pukcheju-gun, 24.iv.1997, J-c. Paik; 10♀, Schwa Beach, Pukcheju-gun, 25.iv.1997, O. Tadauchi; 14♀, Mt. Halla, 300 m, Haean-dong, 26.iv.1997, O. Tadauchi; 10♀, Mt. Halla, 300 m, Haean-dong, 26.iv.1997, J-c. Paik. [KEIU] KOREA: 1♀, GG Bogwangsa, 25.v.1975, DS Kang; 1♀, GG Pocheon Yongmunsan, 28.v.1983, YM Jo; 1♀, GG Goyang Bogwangsa, 25.v.1975, YJ Heo; 1♀, GG Bogwangsa, 22.v.1985, SC Chu; 1♀, GG Gwangreung, 28.v.1972, JJ Kim; 1♀, GG Gwangreung, 14.v.1972, MS Sim; 1♀, GW Gyebangsan, 5.vi.1983, MR Kim; 6♀, JJ Gamnyeong, 9.v.1983, MR Kim; 1♀, GG Ui-dong, 5.vi.1976, Jeon; 1♀, GG Ui-dong, 21.v.1961, JJ Kim; 1♀, GG Paldang, 14.v.1961, BD Lee; 1♀, CN Gyeruongsan Gapsa, 26.v.1974, HR Lee; 1♀, JN Jirisan Cheoneunsa, 6.v.1977, ES Oh; 1♀, GG Morae-dong, 12.v.1966, TY Lee; 1♀, GW Choaksan Guryongsa, 8.vi.1974, HY Kang; 1♀, GW Sokcho Seouidae Suryeongwon, 20.v.2001, YG Park; 1♀, GG Goyang Aengmubong, 9.v.1971, SG Lee; 1♀, GG Goyang Bogwangsa, 25.v.1975, YJ Heo; 1♀, GG Gwanaksan, 7.vii.1989, RCH; 1♀, GW Gangchon, 22.v.1977, JH Lee; 1♀, CN Gyeruongsan Gapsa, 26.v.1974, YS Joo; 1♀, CN Gongju-

sanseong, 28.v.1989, PSW; 1♀, CN Taean Wonsando haebyeon, 27.v.2001, HS Won; 1♀, JB Muju Gucheondong, 22.v.1983, JH Han. [QIAL] KOREA: 1♀, GB Yechon-gun Santaek-ri, 1.vi.2000, HS Lee; 1♀, GW Hoengseong-gun Dunnaemyeon Cheongtaesan, 29−30.v.2009, HS Lee; 1♀, JJ Bukjeju-gun Beach, 26.iv.1997, O. Tadauchi; 6♀, CN Taean-gun Taean-eub Eoen-ri, 20.v.2006, SU Park; 1♀, GG Anyang, 19.iv.1997, AY Kim; 1♀, JJ Gwaneumsa, 24.v.1995, HS Lee; 2♀, GB Yechon Jeongso-ri, 24.v.2001, HS Lee; 1♀, JJ Seogwipo Donnaeko, 23.v.1996, HS Lee; 1♀, GW Jinbumyeon Odaesan Bukdaesa, 30.v.1996, HS Lee; 1♀, GW Seolakdong, 26.v.2002, HS Lee; 9♀, GW Hoengseong-gun Cheongtaesanhyuyangrim, 22.v.2010, HS Lee; 1♀, Mt. Jeongkwangsan GG, 30.iv.1994, HS Lee; 2♀, JN Heuksanmyeon Daejangdo, 2−4.v.2007, HS Lee.

Floral records: Korea: *Brassica campestris*, Sagina *japonica*.

Distribution: Korea (south and central Korea); China (Heilongjiang, Jilin Provs.).

Region: Eastern Palaearctic.

Korea: GG, GW, CN, GB, JN, JB, JJ.

34. *Andrena* (*Melandrena*) *parathoracica* Hirashima, 1957
(Pl. 11, Female: D; Male: E)
Hong-ga-seum-ae-kkot-beol

Andrena (*Gymnandrena*) *parathoracica* Hirashima, 1957, Mushi, 30: 63−64, Type: male, TL: Honshu, TD: JELKU [female & male, Japan]; Hirashima, 1964, J. Fac. Agr., Kyushu Univ., 13: 59−62; Hirashima, 1966, J. Fac. Agr., Kyushu Univ., 14: 106, 119 [female & male, in key]; Kim, 1970, Ill. Enc. Faun. & Flor. Korea, 11: 660 [Korea]; Tadauchi, 1989, A Check List of Jap. Insects, 683; Kim et al., 1990, Ent. Res. Bull., 16: 4; Tadauchi and Lee, 1992, Esakia, (3): 50 [Korea]; ESK & KSAE, 1994: 266; Kim, 1996: 211.

Andrena (*Melandrena*) *parathoracica*: Osytshnjuk, 1995, Key Insects Russian Far East, 4 (1): 504, 523 [female & male, in key]; Tadauchi et al., 1997, Esakia, (37): 200 [Korea, in list]; Tadauchi et al., 2001, Esakia, (41): [in URL]; Gusenleitner & Schwarz, 2002, Entomofauna, Suppl., 12: 579; Xu and Tadauchi, 2009, J. Fac. Agr., Kyushu Univ., 54: 114; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 118 [photos].

Andrena parathoracica: Kim, 1970: 660, 824 (first Korean record).

Andrena (*Melandrena*) *parathoracica*: Osytshnjuk, 1995, 4 (1): 504, 523 [female & male, in key]; Tadauchi et al., 1997, (37): 200 [Korea, in list]; Tadauchi et al., 2001, (41): [in URL]; Gusenleitner & Schwarz, 2002, Suppl. 12: 579; Lee & Paik, 2003: 131; Xu & Tadauchi, 2009, 54: 114; Paek et al. 2010: 212; Tadauchi, 2014, 118 [photos].

Description: Based on the redescription of Hirashima (1964).

Female. Body length 13−14 mm.

Pubescence: Hairs on head short to more or less long, not specially dense, pale or pale fulvous on clypeus, antennal regions, occiput and cheeks, fuscous on sides of face, frons, vertex and cheeks, near eyes; facial fovea blackish. Hairs on thorax bright fulvous above in fresh specimens, becoming paler beneath; thorax without black hairs but occasionally sparse brownish hairs present on mesoscutum and scutellum; dorsal frings of propodeal corbicula long, dense, pale fulvous; tibial scopa dense, composed of rather short, coarse, blackish hairs. Metasoma scanty of hairs with discs

of 1st and 2nd terga bare; hairs on sides of 1st tergum pale, those on the following terga brownish to blackened; caudal fimbria black.

Structure: Process of labrum more or less small, slightly reflected and entire apically; clypeus well convex, slightly shiny, strongly rugoso-punctate, without any trace of median, longitudinal, impunctate space; facial fovea long, wide, separated from eye by a punctate space; antennae with 3rd segment about equal to 4th plus 5th; cheeks slightly broader than eyes seen in profile, rounded above, receding below, densely tessellate posteriorly, very weakly punctate near eyes. Mesoscutum densely and more or less strongly punctate with punctures on anterior portion roughened, weaker than those on clypeus; propodeal enclosure granulate, finely wrinkled basally. Metasoma shiny; 1st tergum smooth, densely punctate with punctures much weaker than those on mesoscutum; basal portions of 2nd and 3rd metasomal terga more densely and slightly more finely punctate than in 1st tergum; posterior depressions of 2nd to 4th terga very broad, microscopically punctate.

Male. Body length 12–14 mm.

Pubescence: Hairs on face including clypeus long, abundant, dull pale fulvous, intermixed with sparse to somewhat dense brown ones; hairs on occiput and cheeks also dull pale fulvous; hairs on sides of face, frons and cheeks near eyes brown to fuscous. Hairs on thorax long, abundant, fulvous above, paler below, without admixture of brownish ones; hairs on legs primarily yellowish. Metasoma scanty of hairs; hairs on 1st to 3rd terga short, pale, those on the rest of terga primarily brownish to brown.

Structure: Mandibles long, rather robust, with sharp apices; process of labrum rather small, weakly notched apically or nearly entire; clypeus strongly convex medially to strongly and coarsely rugoso-punctate, weakly shiny; antennae with 3rd segment about one and one-half times as long as broad, a little longer than 4th which is a little shorter than 5th; cheeks much broader than eyes seen in profile, its outline distinctly convergent behind seen from above, densely tessellate or nearly shagreened behind. Mesoscutum tessellate, more or less strongly punctate with punctures especially roughened anteriorly, slightly weaker than those on clypeus; scutellum convex, much more weakly punctured than in mesoscutum; enclosure well indicated, rather finely granulate, wrinkled basally. Metasoma smooth and shiny; 1st and the following terga sparsely, weakly to very weakly punctate, occasionally punctures nearly obsolescent; posterior depressions of terga broad, not sharply indicated.

Remarks: It is distinctive by the metasomal terga without any trace of hair bands, tibial scopa and caudal fimbria black.

Specimens examined: [JELKU] KOREA: 1♀, Kan-Ki Li, Ii Paek Meon, Nam Weon Gun, Cheon-La Buk Do, 16.v.1991, T. Saigusa; 1♀, ditto, O. Tadauchi. [KEIU] KOREA: 1♀, GG Cheonmasan, 28.v.1982, YM Koh; 1♀, GG Cheonmasan, 28.v.1982, SS Park; 1♀, GG Yongjusa, 28.v.1982, JH Che; 1♀, GW Yanggu Bangsan Dutayeon, 12.vi.1990, JI Kim; 1♀, GW Pocheon Baekunsan, 10.v.1997, JH Han; 1♀, GG Aengmubong, 14.iv.1974, CH Sin; 1♀, GW Inje Bangtaesan, 4–6.v.1999, JH Yang; 1♀, GB Yeongju Oeraisan, 30.iv.1998, JG Kim; 1♀, JJ Jungmun, 4.v.1978, JU Lee; 1♀, GG Cheonmasan, 7.v.1977, JU Lee; 1♀, GG Gwangreung, 10.vi.1973, CH Jo; 1♀, GW Taebaek Hambaeksan Jeongsan, 11.vii.1999, SM Lyu; 1♀, GW Inje Bangtaesan Gasan-ri, 26.vi.1996, SM Ryu; 1♀, CN Gyeruongsan Donghaksa, 20.v.1984, SH Nam; 1♀, GW Jeongseon Gariwangsan, 27.v.1998, SM Ryu; 1♀, CB Sobaeksan, 6.vi.1981, OJ Kwak; 1♀, CB Wolaksan, 30.v.1987, SJ Choi. [QIAL] KOREA: 1♀, CB DanYang Jukryeonghyugeso, 9.v.1997, 1♀, GW Gariwangsan, 15.v.2011, HS Lee; 5♀, GW Hoengseong-gun Cheongtaesanhyuyangrim, 22.v.2010, HS Lee; 2♀, JN Jirisan Piagol, 22.v.1999, HT Kim; 1♀, JB Muju-gun Deokyusan, 25.v.1993; 1♀, GB Geumosan, 31.v.1996, YG Kim.

Floral records: Not available.
Distribution: Korea (Central, Southern); Japan (Hokkaido, Honshu, Shikoku, Kyushu, Tsushima); Russia (Far East area).
Region: Eastern Palaearctic.
Korea: GG, GW, CB, JB, JN, GB, JJ.

35. *Andrena* (*Melandrena*) *sasakii* Cockerell, 1913 (Pl. 12, Female: A; Male: B)
Sa-sa-ki-ae-kkot-beol

Andrena sasakii Cockerell, 1913, (8) 11: 189. Type: male; TL: Japan; TD: USNM.
Andrena (?*Gymnandrena*) *sasakii*: Hirashima, 1964, 13: 66−69 [female & male, redescription].
Andrena (*Gymnandrena*) *sasakii*: Kim et al., 1990: 4 (first Korean record); ESK & KSAE, 1994: 266; Kim, 1996: 212.
Anthrena consimilis Alfken, 1900, Ent. Nachr., 26: 177 [female, Japan].
Andrena consimilis (nec consimilis Smith, 1847): Cockerell, 1913, Ann. Mag. nat. Hist., (8)11: 190 [female, in key, Japan]; Yano, 1932, Icon. Ins. Jap., 272 [female, Japan]; Kato, 1938, Insect-fauna Musashino, 152 [in list]; Yasumatsu, 1941, Peking nat. Hist. Bull., 15: 280 [in list].
Andrena plesia Viereck, 1918, Proc. biol. Soc. Washington, 31: 59, new name for *Andrena consimilis* Alfken.
Andrena alopex Cockerell, 1917, Entomologist, 50: 86 [female, Japan].
Andrena (*Melandrena*) *sasakii*: Tadauchi et al., 1997, (37): 200 (in list); Gusenleitner & Schwarz, 2002: 661−662; Lee & Paik, 2003: 131; Paek et al., 2010: 212; Tadauchi, 2009: 120−212.

Description: Based on the redescription of Hirashima (1964).
Female. Body length 12−13 mm.
Pubescence: Hairs on head and thorax short to more or less long, dense, those on metasoma short, dense, fine. Hairs on clypeus more or less dense, fine, yellowish; hairs on those on occiput and cheeks slightly paler; hairs on vertex brown or nearly fuscous; facial fovea brownish. Hairs on thorax fulvous above, slightly paler below, without admixture of darker hairs; dorsal fringe of propodeal corbicula long, dense, not well arranged; tibial scopa well developed, composed of coarse, well arranged, principally simple hairs; tibial scopa bright, silvery or distinctly yellowish in front, obscurely to more or less distinctly brownish above. Hairs on 1st tergum and median bases of 2nd more or less long, yellowish, those on the rest of 2nd and the following terga short, suberect to downy, primarily brownish; posterior margin of 2nd tergum with lateral, that of 4th with complete fringes of dense, short, appressed or nearly so, whitish or white hairs; caudal fimbria bright fuscous.
Structure: Process of labrum large, with apical margin almost rounded, entire; clypeus well convex, narrowly tessellate basally, broadly nearly smooth, densely punctate with punctures somewhat coarse and strong medially, without median, impunctate, raised line; antennae moderately long, with 3rd segment about equal to next two segments together; cheeks slightly broader than eyes seen in profile, convex, shagreened. Mesoscutum tessellate, with about or more than anterior half shagreened or nearly roughened; punctures on mesoscutum sparse, weak, considerably weaker than those on clypeus; propodeal enclosure strongly tessellate or nearly shagreened, weakly

wrinkled basally. Metasomal terga weakly shiny; 1st tergum densely tessellate, with weak, sparse, more or less roughened punctures; 2nd and the following terga weakly tessellate, somewhat densely punctate with punctures weak and a little roughened; posterior depressions of terga broad, not well indicated.

Male. Body length 10–11 mm.

Pubescence: Hairs on head and thorax long, abundant but not obscure integument, those on metasoma short, more or less dense, fine, therefore not conspicuous; hairs on full body, including legs, almost uniform in colour, pale fulvous, not mixed with brownish hairs on any portion. Hairs on clypeus erect basally, becoming downy apically. Hairs on posterior margins of 2nd to 4th terga denser than those on elsewhere, forming indistinct fringes.

Structure: Process of labrum large, transverse, well convex, nearly smooth and shiny; clypeus well convex, tessellate or sometimes narrowly nearly smooth medially, densely punctate with punctures not strong, small; antennae long, with 3rd segment about one and one-half times as long as broad, indistinctly shorter than 4th which is about as long as 5th; 5th and the following segments slightly convex anteriorly; cheeks slightly broader than eyes seen in profile, its outline distinctly convergent behind seen from above, shagreened. Mesoscutum densely tessellate or shagreened, weakly punctate with punctures more or less roughened; propodeal enclosure wrinkled basally, shagreened apically. Metasonal terga densely tessellate with weak, not specially dense punctures, those of 1st tergum and base of 2nd more or less roughened; posterior depressions of terga somewhat well indicated.

Remarks: It is separable by the thorax densely covered with dull fulvous hairs, the metasomal tergum 1 tessellate with roughened punctures, the following terga less tessellate with dense, weak roughened punctures.

Specimens examined: [KEIU] KOREA: 1♂, GG Bukhansan Uiryeong, 6.v.1996, JD Yeo; 1♀, GG Suraksan, 29.v.1999, JY Choi; 1♀, GG Bogwangsa, 23.iv.1980, Byun (H); 1♀, GG Byeokje Bogwangsa, 21.vi.1997, SM In; 1♀, GG Aengmubong, 17.iv.1983, DY Moon; 1♂, GG Aengmubong, 17.iv.1983, JY Park; 1♂, GG Aengmubong, 17.iv.1983, YM Jo; 1♀, GG Gwangreung, 14.v.1972, TS Yoo; 1♀, GG Wangbangsan, 6.v.1977, IS Yeo; 1♀, GG Wangbangsan, 16.v.1982, ML Kim; 1♀, GG Cheonmasan, 28.v.1982, MR Kim; 1♀, GG Cheonmasan, 28.v.1982, MD Yim; 1♀, GG Cheonmasan, 27.v.1982, MG Oh; 1♂, GG Cheonmasan, 19.v.1973, YR Joo; 1♀, GG Ganghwa Manisan, 28.iv.1996, HS Won; 1♀, GW Yanggu Daeamsan, 13.vi.1990, JI Kim; 1♀, GW Seolaksan Baekdamsa, 5.vi.1979, YJ Sa; 1♀, GW Gyebangsan, 5.vi.1983, MR Kim; 1♂, GW Donghae Cheongoksan, 16.viii.1997, MR Kim; 1♀, CN Gyeruongsan, 5.viii.1973, SH Nam; 1♀, CN Gyeruongsan, 7.iv.1997, JU Sin. [QIAL] KOREA: 1♀, GG Uidong Uiryeonggii (Bukhansangukripgongwon), 20.iv–24.v.2010, HS Lee; 3♂, GG Geumcheon-gu Gwangaksan, 4.v.2013, HS Lee; 1♀, GG Yongin-si Hantaesikmulwon, 30.v.2001, HS Lee; 1♀, GB Churyeong, 3.vii–16.vii.1999, HS Lee; 1♂, GG Gunpo-si Sujidong Surisan, 17.iv.2005, HS Lee.

Floral records: Japan: *Brassica campestris*; *Prunus japonica*.

Distribution: Korea (southern and central Korea); Japan (Honshu, Sado Is., Shikoku, Kyushu, Tsushima Is., Taneagashima Is.); China (new record, Shanghai, Zhejiang, Shandong, Shannxi Provs.).

Region: Eastern Palaearctic.

Korea: GG, GW, CN.

36. *Andrena* (*Melandrena*) *thoracica sinensis* Cockerell, 1910 (Pl. 12, Female: C-D)

Jung-guk-ae-kkot-beol

Andrena sinensis Cockerell, 1910: 249. Type: female; TL: China; TD: USMN.
Andrena thoracica: Radoszkowski, 1890: 230 (first Korean record) (nec Fabricius).
Andrena thoracica sinensis: Yasumatsu, 1941: 281 (Korea); Kim, 1970: 658, 824.
Andrena (*Gymnandrena*) *thoracica sinensis*: Hedicke, 1939: 337; Yasumatsu, 1946: 20 (Korea); Hirashima, 1957: 62; Kim et al., 1990: 4−5; ESK & KSAE, 1994: 266; Kim, 1996: 212.
Andrena (*Melandrena*) *thoracica*: Osytshnjuk, 1995: 504, 523 [female & male, in key]; Gusenleitner & Schwarz, 2002: 759−760.
Andrena (*Melandrena*) *thoracica sinensis*: Tadauchi et al., 1997, (37): 200 (in list); Lee & Paik, 2003: 131−132; Xu et Tadauchi, 2009: 113−114. Paek et al., 2010: 212.
Other synonymies: See Gusenleitner & Schwarz (2002).

Redescription: Female. Body length 13−15 mm.

Pubescence: Hairs on head short to more or less long, not dense, pale fulvous on clypeus, antennal regions and cheeks, fuscous on sides of face, frons, vertex and cheeks, near eyes; facial fovea blackish. Hairs on thorax bright fulvous above in fresh specimens, becoming paler beneath; thorax without black hairs but occasionally sparse brownish hairs present on mesoscutum and scutellum; dorsal fringes of propodeal corbicula long, dense, pale fulvous; tibial scopa dense, composed of coarse, blackish hairs. Metasoma scanty of hairs with no trace of hair bands; hairs on terga black; caudal fimbria black.

Structure: Process of labrum emarginated at apex; clypeus well convex, extremely densely punctured, without median impunctate line or indistinct apically; facial fovea long, wide; antennae with flagellar segment 1 distinctly longer than 2 plus 3; cheeks slightly broader than eyes seen in profile, rounded above, receding below, densely tessellate posteriorly, very weakly punctate near eyes. Mesoscutum slightly tessellate and densely and more or less strongly punctate with punctures on anterior portion roughened, sparser in central portion; propodeal enclosure coarsely wrinkled nearly all over. Metasoma shiny, sparsely to rather sparsely punctated; posterior depressions of 2nd to 4th terga weak.

Male. Body length 11 mm.

Pubescence: Hairs on face including clypeus long, abundant, dull pale fulvous, intermixed with sparse brown ones; hairs on occiput and cheeks also dull pale fulvous; hairs on sides of face, frons and cheeks near eyes brown to fuscous. Hairs on thorax long, abundant, fulvous above, paler below, without admixture of brownish ones; hairs on legs primarily yellowish. Metasoma scanty of hairs; hairs on 1st to 3rd terga short, pale, those on the rest of terga primarily yellowish.

Structure: Mandibles long, rather robust, with sharp apices; process of labrum rather small, weakly notched apically or nearly entire; clypeus strongly convex medially to strongly and coarsely rugoso-punctate; antennae with 1st flagellar segment shorter than 2nd which is a little shorter than 3rd; cheeks much broader than eyes seen in profile, densely tessellate or nearly shagreened behind, smooth and shiny with fine punctures. Mesoscutum weakly tessellate, more or less strongly punctate with punctures; propodeal enclosure well indicated, rather finely granulate, weakly wrinkled basally. Metasoma smooth and shiny; 1st and the following terga sparsely, weakly to very weakly punctate, occasionally punctures nearly obsolescent; posterior depressions of terga

broad, not sharply indicated.

Remarks: It is separable from *Andrena parathoracica* Hirashima by the process of labrum emarginate, the clypeus without median impunctate line or indistinct apically and the 1st flagellar segment longer than segment 2 + 3 in female.

Specimens examined: [KEIU] KOREA: 1♀, GG Mt. Yongmunsan, 28.v.1982, ML Kim; 1♀, GG Cheonmasan, 11.vi.1961, SU Kim; 1♀, GG Pocheon, 18.iv.1975, SM Kang.

Floral records: *Brassica campestris* (China).

Distribution: Korea (Central); China (Gansu, Beijing, Shandong Provs.); Russia (Far East area).

Region: Eastern Palaearctic.

Korea: GG.

Subgenus *Micrandrena* Ashmead, 1899

Micrandrena Ashmead, 1899, Trans. Amer. ent. Soc., 26: 89. TS: *Micrandrena pacifica* Ashmead, 1899 (=*Andrena melanochroa* Cockerell, 1889), by original designation.

37. *Andrena* (*Micrandrena*) *chirisana* Tadauchi et Lee, 1992
(Pl. 12, Female: E; Male: F)
Ji-ri-ae-kkot-beol

Andrena (*Micrandrena*) *chirisana* Tadauchi, 1992, in Tadauchi & Lee, 1992: 53 (Mt. Jirisan, Korea). Type: female; TL: Korea; TD: JELKU.

Andrena (*Micrandrena*) *chirisana*: Tadauchi et al., 1997: 200; Lee & Paik, 2003: 132; Paek et al., 2010: 212; Gusenleitner & Schwarz, 2002: 173.

Description: Based on the description of Tadauchi (1992).

Female. Body length 6.5–7.0 mm.

Pubescence: Hairs on head and thorax short, on head whitish, on vertex and thorax dull whitish, without brown ones; facial fovea brownish above, paler below. Metasomal tergum 1 with very sparse, short, whitish hairs, only laterally; posterior margins of metasomal terga 2–3 with lateral fringes of dense, appressed, white hairs; metasomal sterna with dense, white fringes; caudal fimbria pale brownish.

Structure: Process of labrum small, slightly round apically, not rectangular; clypeus strongly convex, weekly tessellate, scattered with weak punctures; facial fovea with upper end occupying slightly less than one haif of postoceiiar distance, with lower end reaching basal margin of clypeus; facial fovea not separated from eye margin by a wide shiny space; cheeks narrower than eye seen in profile. Mesoscutum very weakly tessellate and shiny with small, sparse punctures; scutellum nearly smooth, shiny; propodeal enclosure large, well indicated, strongly wrinkled all over. Metasomal metasomal tergum 1 very weakly tesselate, impunctate anteriorly, smooth and shiny posteriorly; terga 2 and the following terga very weakly tessellate; posterior depressions of terga

2−4 wide, smooth and shiny.

Male: Unknown.

Remarks: This species is similar to *Andrena komachi* Hiiashima and *Andrena munakatai* Tadauchi,. But it is separable from *A. komachi* and *A. munakatai* by the process of labrum smaller and not rectangular, the mesoscutum with sparser and smaller punctures, the metasomal tergum 1 very weakly tessellate, impunctate anteriorly, shiny and smooth posteriorly, and the posterior depressions of the metasomal terga 2−4 wide, almost smooth and shiny. As the *Andrena komachi* group has variations, it is need to examine by DNA study in future.

Specimens examined: [JELKU] KOREA: Holotype, 1♀, GN Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, 11.v.1991, O. Tadauchi; 1♀, ditto, 9.v.1991, O. Tadauchi.

Floral records: Not available.

Distribution: Korea (Southern).

Region: Eastern Palaearctic.

Korea: GN.

38. *Andrena* (*Micrandrena*) *falsifissima* Hirashima, 1966
(Pl. 12, Female: E; Male: F)
Tae-baek-ae-kkot-beol

Andrena (*Micrandrena*) *falsifissima* Hirashima, 1966, 14: 92−93, 95. Type: female, TL: Honshu, Japan; TD: JELKU.

Andrena (*Micrandrena*) *falsifissima*: Tadauchi, 1985: 60−64 [male, Japan]; Tadauchi, 1989: 684; Tadauchi et al., 2001 [in URL]; Gusenleitner & Schwarz, 2002: 262; Xu and Tadauchi, 2011: 280; Tadauchi, 2014: 122 [photos].

Description: Based on the description by Hirashima (1966) and Tadauchi (1985).

Female. Body length 6 mm.

Pubescence: Hairs on head grey, short; facial fovea narrow, separated from eye margin by a narrow space, silvery. Hairs on thorax grey, sparse; dorsal fringe of propodeal corbicula scanty, not arranged in a compact fringe; tibial scopa moderate, glistening, silvery, hairs on dorsal margins of hind tibiae slightly brownish basally. Metasoma scanty of hairs; posterior margins of terga without fringe of hairs; caudal fimbria brownish; sterna hairy, without special fringes.

Structure: Process of labrum rounded; clypeus well convex, densely tessellate, rather densely and more or less coarsely punctured. Mesoscutum finely tessellate, somewhat shagreened anteriorly, distinctly punctured; scutellum densely punctured; propodeal enclosure strongly wrinkled all over; propodeum outside enclosure slightly less coarsely sculptured than enclosure. Metasoma shiny; 1st tergum tessellate, scattered with microscopical fine punctures; posterior margins of 1st tergum broadly nearly smooth; 2nd tergum tessellate with fine punctures; posterior depression of 2nd tergum well indicated, broadened medially, smooth and shiny; 3rd tergum tessellate, less punctured than 2nd; posterior depression of 3rd sharply indicated, smooth and strongly shiny; 4th tergum less tessellate than 3rd, impunctate.

Male. Body length 5.5−6 mm.

Pubescence: Hairs on body short, scanty, nearly uniformly dull white; head and thorax without brownish or blackish hairs; hairs on clypeus short, sparse. Hairs on mesoscutum sparse. Metasoma scanty of hairs; posterior margins of metasomal terga 2−4 each with an obscure, lateral fringe; posterior margins of metasomal sterna 2−4 without distinct, white fringes.

Structure: Process of labrum narrow, shiny, slightly emarginate apically; clypeus smooth and shiny with dense, distinct punctures; cheeks narrower than eye seen in profile; flagellum 1 nearly as long as wide, about as long as 2, and as long as 3. Mesoscutum very weakly tessellate, shiny, with strongly punctate; propodeal enclosure strongly wrinkled all over. Metasomal terga very weakly tessellate and shiny with fine punctures; posterior depressions of metasomal terga 2−3 well indicated.

Remarks: It is distinctive by the metasomal terga 2−4 tessellate, at least on basal portions, the propodeal enclosure strongly wrinkled all over., the flagellar segments 4−10 ferruginous. It flies in summer to fall. This species is for the first time recorded in Korea.

Specimens examined: [JELKU] JAPAN: Holotype female, and paratopotype female, Sugadaira, 1,300−1,500 m, Shinshu, Honshu, 30.viii.1963, Y. Hirashima. [KEIU] KOREA: 1♀, GG Banwol Jinjin 1-ri, 22.iv.1984, MH Lee; 1♀, GW Taebaeksan, 5.viii.1961, WD Kim; 1♀, GW Taebaeksan Danggol, 13.viii.1983, MR Kim.

Floral records: Japan: *Angelica ursina* Maxim.; *Aralia cordata* Thunb..

Distribution: Korea (Central); Japan (Hokkaido, central Honshu); Russia (Far east area).

Region: Eastern Palaearctic.

Korea: GG, GW.

39. *Andrena* (*Micrandrena*) *hikosana* Hirashima, 1957

(Pl. 13, Female: A; Male: B)

Hi-kko-san-ae-kkot-beol

Andrena (*Micrandrena*) *hikosana* Hirashima, 1957, 30: 53, Type: female, TL: Kyushu, Japan, TD: JELKU [female].

Andrena (*Micrandrena*) *hikosana*: Kim et Kim, 1983a: 7 (first Korean record); Tadauchi & Lee, 1992: 52; ESK & KSAE, 1994: 266; Kim, 1996: 213; Tadauchi et al., 1997: 194 (Jejudo); Gusenleitner & Schwarz, 2002: 343−344; Lee & Paik, 2003: 132; Paek et al., 2010: 212; Xu et Tadauchi, 2011: 280; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 124 [photos].

Description: Based on the redescription by Hirashima (1965).

Female. Body length 7 mm.

Pubescence: Hairs on body short, scanty, nearly uniformly greyish or very slightly yellowish grey; facial fovea silvery, bright and very slightly yellowish. Hairs on mesoscutum sparse, erect; dorsal fringe of propodeal corbicula sparse, not well arranged; tibial scopa not specially dense, well arranged, composed of silvery white, short simple hairs. Metasoma scanty of hairs, only slightly hairy laterally, without tergal hair fringes; caudal fimbria bright, yellowish, not dense.

Structure: Process of labrum large, nearly quadrate, apex entire; clypeus well convex, densely tessellate or weakly shagreened, with weak, sparse, somewhat roughened punctures; antennae

long, 3rd segment as long as 4th plus 5th; 4th segment slightly broader than long; 5th segment approximately as long as broad; facial fovea narrow; cheeks about as broad as eyes seen in profile, rugulose with an indication of microscopical punctures, shiny. Metasomal terga specially shiny; 1st tergum nearly smooth; about basal half of 2nd tergum weakly, those of 3rd and 4th more weakly tessellate; metasomal terga nearly impunctate or scattered with microscopical fine punctures; posterior of margins of terga thick and posterior depressions hardly indicated medially.

Male. Body length 6 mm.

Pubescence: Hairs on clypeus long, dense, downy, snow-white; hairs on the rest of head and thorax more or less long to long, more or less dense, pale above and whitish to white below. Hairs on metasomal terga short, sparse, pale, not mixed with brownish hairs on any portion; hairs on posterior margins of 2nd to 4th terga more dense laterally than elsewhere.

Structure: Process of labrum broader than long, but not so transverse, slightly convex and weakly emarginate apically; clypeus well convex, shagreened with weak, somewhat dense, more or less roughened punctures; antennae elongate with 3rd segment a little longer than broad and a little longer than 4th; 4th segment approximately as long as broad and shorter than 5th; 5th and the following segments slightly convex beneath; cheeks narrower than large eyes, rugulose, distinctly receding beneath. Mesoscutum densely tessellate or nearly shagreened, feebly shiny, with an indication of sparse, weak, somewhat roughened punctures; propodeal enclosure large, almost as strongly wrinkled as dorsal face of propodeum. Metasomal terga very shiny, smooth except for bases of 2nd to 4th terga where microscopically tessellate, scattered with microscopical fine punctures; posterior margins of basal four terga rather thick, those of 5th and 6th terga thin; posterior depressions of 1st to 4th terga hardly indicated medially, those of 5th and 6th very weakly indicated.

Remarks: It is distinctive by the metasomal tergum 1 punctate, nearly smooth and shiny to weakly tessellate.

Specimens examined: [JELKU] KOREA: 1♀, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, Kyon Sang Nam Do, 9.v.1991, O. Tadauchi; 1♀, Dal Gung, San Nae Meon, Nam Weon Gun, Cheon-La Buk Do, 10.v.1991, O. Tadauchi; 1♀8♂, Mt. Nogodan, San Nae Meon, Nam Weon Gun, Cheon-La Nam Do, 10.v.1991, T. Saigusa; 2♂, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, Kyon Sang Nam Do, 11.v.1991, O. Tadauchi; 1♀1♂, same locality and date as above, K. Morimoto; 16♂, same locality and date as above, T. Saigusa; 1♀1♂, Sim Won Valley, San Nae Meon, Nam Weon Gun, Cheon-La Nam Do, 13.v.1991, O. Tadauchi; 7♂, same locality and date as above, T. Saigusa; 1♂, same locality and date as above, K. Morimoto; 27♂, Mt. Nogodan, San Nae Meon, Nam Weon Gun, Cheon-La Nam Do, 13.v.1991, O. Tadauchi; 6♂, Jeong Lyong Chy, San Nae Meon, Nam Weon Gun, Cheon-La Nam Do, 14.v.1991, T. Saigusa; 32♂, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, Kyon Sang Nam Do, 15.v.1991, O. Tadauchi; 1♀, same locality and date as above, K. Morimoto; 5♂, same locality and date as above, T. Saigusa. [Cheju Is.] 1♀, High Resting Area, 1100 m, Mt. Halla, 26.iv.1997, J-c. Paik. JAPAN: Holotype female, and 6 paratopotype females, Sugadaira, 1,300−1,500 m, Shinshu, Honshu, 30.viii.1963 (Y. Hirashima). [KEIU] KOREA: 1♀, GG Bogwangsa, 25.v.1979, GY Park; 1♀, GG Wangbangsan, 29.v.1983, VJ Lee; 8♀, GG Cheonmasan, 28.v.1982, ML Kim; 1♀, GG Cheonmasan, 28.v.1982, JH Chie; 1♀, GG Cheonmasan, 28.v.1982, SS Park; 1♀, GG Chukryeongsan, 1.v.1999, ES Hong; 1♀, GW Chiaksan Geumdae-ri, 6.vi.1974, IH Lee; 1♀, GW Pyeongchang Bongpyeong Huiryeongbong, 22.v.1998, JG Kim; 2♀, CN Seosan Gayasan, 2.v.1997, MR Kim; 2♀, CN Seosan Gayasan, 2.v.1997, JD Yeo; 1♀, JB Juheulsan, 25.vi.1983, MR Kim; 1♀, JB Uljin Onjeongmyeon Baekam, 7.v.1999, SM Lyu; 1♀, JB Muju Gucheondong, 21.v.1983, MR Kim; 1♀, JB Muju Gucheon-dong, 21.v.1983, JS Choi; 15♀, JB Wanju Daedeoksan, 13.v.2000, JD Yeo;

12♀, JB Wanju Daedeoksan, 13.v.2000, MR Kim; 1♀, JB Wanju Unjumyeon Daedunsan, 13.v.2000, MR Kim.

Floral records: Korea: *Forsythia suspensa*. Japan: 23 plants by Tadauchi (1985).

Distribution: Korea (Central, Southern, Jeju); Japan (Hokkaido, Honshu, Sado Is., Shikoku, and Kyushu, Tsushima); Russia (Far East area); China (Shanghai, Zhejiang, Fujian Provs.).

Region: Eastern Palaearctic.

Korea: GG, GW, CN, JB, GN, JJ.

40. *Andrena* (*Micrandrena*) *kaguya* Hirashima, 1965 (Pl. 13, Female: C; Male: D)
Kko-ma-ae-kkot-beol

Andrena (*Micrandrena*) *kaguya* Hirashima, 1965, 13: 467−469, Type: male, TL: Kyushu, Japan; TD: JELKU [female & male].

Andrena (*Micrandrena*) *kaguya*: ESK & KSAE, 1994: 266; Kim, 1996: 213; Tadauchi et al., 1997: 200 (in list); Gusenleitner & Schwarz, 2002: 380; Lee & Paik, 2003: 132; Paek et al., 2010: 212.

Andrena (*Micrandrena*) *brassicae*: Kim & Kim, 1983a: 7 (first Korean record) (nec Hirashima).

Description: Based on the description by Hirashima (1965).

Female. Body length 7 mm.

Pubescence: Hairs on body short, those on head and thorax more or less dense and those on metasoma scanty. Hairs on head pale to white, without brownish ones; facial fovea bright, very slightly brownish or yellowish in some light. Hairs on mesoscutum pale ochreous; hairs on scutellum longer than those on mesoscutum; propodeal corbicula with dorsal fringe of long, more or less well arranged, whitish hairs; tibial scopa more or less compact, composed of well arranged, moderately long to short hairs; tibial scopa bright, silvery, very slightly and narrowly brownish above basally. Discs of 1st and 2nd metasomal terga nearly bare; cilia on terga pale; posterior margins of 2nd and 3rd metasomal terga with lateral fringes of dense, appressed, white hairs; caudal fimbria scanty, bright, nearly pale yellowish brown.

Structure: Process of labrum slightly broader than long, with apical margin rounded; clypeus well convex, densely tessellate, scattered with weak punctures; antennae with 3rd segment more than one and one-half times as long as broad, shorter than 4th plus 5th; 4th segment indistinctly broader than long, 5th as long as broad and 6th very slightly longer than broad; cheeks about as broad as eyes seen in profile, slightly receding, nearly shagreened posteriorly. Mesoscutum feebly shiny, nearly shagreened with small, more or less dense punctures; propodeal enclosure large, densely wrinkled basally with rugae weakened towards apex where nearly shagreened. Metasomal terga tessellate, impunctate, weakly shiny; posterior depressions not well indicated, more weakly tessellate and shiny than elsewhere.

Male. Body length 6 mm.

Pubescence: Hairs on head and thorax more or less long, not dense, those on metasoma short and scanty; hairs on body pale to white, not mixed with brownish or blackish ones on any portion. Hairs on clypeus long, downy, white. Posterior margins of 2nd and 3rd metasomal terga with lateral fringes of suberect, not specially dense, white hairs; hairs on 6th metasomal terga slightly yellowish.

Structure: Process of labrum broader than long, reflected at tip; clypeus much more coarsely sculptured, well convex, nearly shagreened with an indication of small, rather dense, more or less roughened punctures; antennae rather elongate with 3rd segment as long as broad, indistinctly longer than 4th which is indistinctly broader than long; 5th and following segments longer than broad; cheeks slightly narrower than eyes seen in profile, receding, shagreened. Mesoscutum feebly shiny, shagreened with an indication of sparse and very weak punctures; scutellum slightly convex, sculptured nearly as in mesoscutum; propodeal enclosure large, poorly defined, coarsely wrinkled with wrinkles stronger than those on dorsal face of propodeum; mesopleuron nearly roughened. Metasomal terga tessellate, impunctate, weakly shiny; posterior depressions not well indicated, much less tessellate and more shiny than elsewhere.

Remarks: It is closely similar to *Andrena minutula* and *Andrena subopaca*, but can be separable by the apical transverse groove of pronotum not notched in the middle, the pronotum without longitudinal, median line, the process of labrum small.

Specimens examined: [JELKU] JAPAN: Holotype male, allotype female, Fukuoka, Kyushu, 22.iii. 1952, Y. Hirashima. [KEIU] KOREA: 1♀, Domgmyeon Cheongwon, CB, 4.v.1979, BH Choi.

Floral records: Japan: 58 plants by Tadauchi (1985).

Distribution: Korea (Central); Japan (Hokkaido, Honshu, Sado Is., Shikoku, Kyushu); China (new record, Zhejiang Prov.).

Region: Eastern Palaearctic.

Korea: CB.

41. *Andrena* (*Micrandrena*) *komachi* Hirashima, 1965
(Pl. 13, Female: E; Male: F)
Tam-ra-ae-kkot-beol

Andrena (*Micrandrena*) *komachi* Hirashima, 1965, 13 : 469−471. Type: male, TL: Kyushu, Japan, TD: JELKU.

Andrena (*Micrandrena*) *komachi*: Tadauchi et al., 1997: 194−195 (first Korean record, Jejudo); Lee & Paik, 2003: 132; Paek et al., 2010: 212.

Description: Based on the description by Hirashima (1965).

Female. Body length 6−6.5 mm.

Pubescence: Hairs on head and thorax short to more or less long, more or less dense, those on metasomal terga scanty. Hairs on head primarily white; brownish above; facial fovea bright, silvery. Hairs on thorax very pale ochreous above; dorsal fringe of propodeal corbicula long, more or less well arranged; tibial scopa imperfect, scanty, white; tibial scopa rather scanty, composed of short, more or less arranged hairs which are distinctly shorter than in *kaguya*; tibial scopa bright, silver white, narrowly and obscurely brownish above basally. Disc of 1st metasomal tergum bare; cilia on the following terga sparse, white; posterior margins of 2nd and 3rd metasomal terga with large fringes of appressed white hairs laterally; posterior margin of 4th tergum with sparse white hairs not forming distinct fringe; caudal fimbria scanty, bright, slightly brownish; posterior margins of 2nd to 4th metasomal sterna each with a complete fringe of dense whitish tomenta.

Structure: Process of labrum trapezoid or apical margin rounded, entire; clypeus well convex, shagreened, with an indication of sparse, small, more or less roughened punctures; antennae more or less short, with 3rd segments slightly less than twice as long as broad, approximately as long as next two segments together which are broader than long, respectively; 6th and the following segments approximately as long as broad; cheeks about as broad as eyes seen in profile, more roughened than clypeus. Mesoscutum weakly tessellate with small, dense, a little roughened punctures; mesosctum more shiny than in *kaguya*, roughened anteriorly; propodeum quite coarsely sculptured with wrinkles stronger than in *kaguya*; enclosure large, irregularly wrinkled all over with wrinkles not at all weakened at apex. Metasoma shiny, 1st tergum especially so; 1st tergum nearly smooth, scattered with microscopical fine punctures, or sometimes weakly to more or less distinctly tessellate basally; 2nd and the following terga distinctly tessellate, with an indication of sparse, microscopical punctures; posterior depressions of 2nd to 4th terga very broad, much less tessellate than elsewhere, impunctate.

Male. Body length 5 mm.

Pubescence: Clypeus densely covered with long, downy, snow white hairs; hairs on the rest of head sparser, white. Hairs on thorax rather long, dense, whitish above, white below. Metasoma much more hairy than in *kaguya* with hairs short, fine, nearly white; posterior margins of 2nd and 3rd metasomal terga with lateral fringes of dense, subappressed, white hairs which are much more conspicuous than in *kaguya*; similar and much sparser hairs present on posterior margin of 4th tergum; hairs on 6th tergum slightly yellowish; posterior margins of 2nd to 5th metasomal sterna each with a complete fringe of more or less long, dense, suberect, white hairs.

Structure: Process of labrum transverse, slightly convex, apex entire; clypeus well convex, weakly tessellate and densely punctured, slightly roughened, with punctures denser and coarser than in *kaguya*; antennae rather long, with 3rd segments lightly longer than broad, 4th segment broader than long, 5th and the following segments indistinctly longer than broad; cheeks slightly narrower than large orbit seen in profile, much receding, nearly shagreened. Mesoscutum nearly shagreened with dense, small, somewhat roughened punctures, nearly roughened anteriorly; punctures on mesoscutum much coarser and denser than in *kaguya*; propodeum coarsely sculptured with strong rugae; enclosure large, strongly wrinkled with wrinkles not at all weakened at apex. Metasomal terga, especially 1st tergum, well shining; 1st tergum nearly smooth or microscopically tessellate, scattered with microscopical punctures; 2nd tergum weakly tessellate-punctate, the following terga with sculptures becoming weaker toward apical terga; posterior depressions of 1st to 5th terga not well indicated, more finely sculptured than elsewhere, impunctate.

Remarks: This species is characterized by the 1st metasomal tergum nearly smooth and shiny with fine punctures, the posterior margins of the 2nd to 4th metasomal sterna each with a complete fringe of dense, whitish hairs, and the male clypeus with, quite dense, silvery, downy hairs.

Specimens examined: [JELKU] KOREA: 1♀9♂, JJ Sanisu-dong, Namjeju-gun, 23.iv.1997, O. Tadauchi; 1♀1♂, Kwangpyong-ri, Namjeju-gun, 23.iv.1997, O. Tadauchi; 2♀2♂, Pijarim Forests, Pukcheju-gun, 24.iv.1997, J-c. Paik; 1♀7♂, Pijarim Forests, Pukcheju-gun, 24.iv.1997, O. Tadauchi; 8♀, Mt. Halla, 550 m, Haean-dong, 26.iv.1997, O. Tadauchi; 1♂, Mt. Halla, 550 m, Haean-dong, 26.iv.1997, J-c. Paik; 1♂, High Resting Area, 1,100 m, Mt. Halla, 26.iv.1997, O. Tadauchi; Holotype female and paratopotype male, Tachibanayama, Fukuoka, Kyushu, 21.iv.1951, Y. Hirashima. [KEIU] KOREA: 1♀, GG Pocheon Gangssibong, 2.v.1997, MR Kim; 1♀, GW Pyeongchang Bongpyeong Huiryeongbong, 22.v.1998, JG Kim. [SNUE] KOREA: 1♀, GG Anyang, 23.v.1987, SS An; 1♀, JJ Seongsan, 17.iv.1997, HS Lee; 1♀, GG Hak-

gundan, 23.v.1995, DR Seo; 1♀, GG Hakgyosumokwon, 12.v.1995, SK Sou; 1♀, GG Suwonnongdaesumokwon, 12.v.1995, HR Lee; 1♀, GB Andong, 27.iv.1994, WS Kim; 1♀, GG Seoulnongdae, 12.v.1995, YS Son; 1♀, GB Gunwi, 28.iv.1994, HW Lyu; 2♀, JN Jirisan Cheoneunsa, 27.v.1997, HS Lee; 1♀, GG Suwon Seodundong, 2.v.1994, HS Lee; 1♀, GB Gunwi, 30. iv.1994, HW Lyu; 1♀, GB Gunwi, 26.iv.1994, HW Lyu; 1♀, GG Anyangyuwonji, 29.iv.1989, Jun; 1♀, GG Anyangyuwonji, 9.v.1987, HTT; 1♀, GG Jeonggwangsan, 30.iv.1994, HS Lee; 1♀, ??, 4.v.1982, BS Choi; 1♀, GG Anyang, 5.vi.1987, LTH; 1♀, GG Seoul, 10.vi.1995, KSY; 1♀, GB Cheongsong, 27.iv.1994, ???; 1♀, GW Odaesan Bukdaesa, 10.v.1996, HS Lee; 1♀, GG Suwon Nongdaesumokwon, 12.v.1995, HR Lee; 2♂, GG Suwon Nongdaesumokwon, 15.v.1995, HR Lee. [QIAL] KOREA: 1♀, GG Geumcheongu Gwangaksan, 4.v.2013, HS Lee; 1♀, CN Seosansi Seongyeonmyeon Ilramri, 20.v.2006, HS Lee; 2♂, Jeju, v.2006, HS Lee; 3♂, GG Gwangju, 18.iv.1997, HS Lee; 1♂, GW Odaesanjang, 24.iv.1997, HS Lee; 1♂, GW Yangyang Seomyeon Yeongdeokri, 19.iv.2001, HC Park; 3♀, GG Gunpo Suridong Surisan, 17.iv.2005, HS Lee. [KEIU] KOREA: 1♀, Mt. Gangssibong, Pocheon GG, 2.v.1997, ML Kim; 1♀, Mt. Heeryeongbong Bongpyeong Pyeongchang GW, 22.v.1998, JG Kim.

Floral records: Korea. *Duchesnea chrysantha*, *Brassica campestris*. This species primarily associates with the flowers of *Rosa* and *Potcntilla*. Japan: 13 plants were recorded by Tadauchi (1985).

Distribution: Korea (Central, Southern, Jeju); Japan (southern Hokkaido, Honshu, Shikoku, Kyushu and Tsushima Is.); China (new record, Shanghai, Zhejiang Prov.).

Region: Eastern Palaearctic.

Korea: GG, GW, CN, GB, JJ.

42. *Andrena* (*Micrandrena*) *munakatai* Tadauchi, 1985
(Pl. 14, Female: A; Male: B)
San-o-reum-ae-kkot-beol

Andrena (*Micrandrena*) *munakatai* Tadauchi, 1985, 30: 70, Type: female, TL: Hokkaido, Japan; TD: JELKU.

Andrena (*Micrandrena*) *munakatai*: Tadauchi et Lee, 1992: 53 (first Korean record); Kim, 1996: 213; Tadauchi et al., 1997: 195 (Jejudo); Gusenleitner et Schwarz, 2002: 502; Lee et Paik, 2003: 132; Paek et al., 2010: 212; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 129 [photos].

Description: Based on the description by Tadauchi (1985).

Female. Body length 6.0−6.5 mm.

Pubescence: Hairs on head and thorax short, on head whitish, on vertex and thorax dull, whitish. Metasomal tergum 1 nearly free of hairs; posterior margins of metasomal terga 2−3 with lateral fringes of dense, appressed, white hairs; caudal fimbria pale brownish; sterna 2−5 with apical fringes of dull, white hairs, which are less distinct (sparser and shorter) than in *komachi*.

Structure: Process of labrum large, rectangular; clypeus well convex, densely tessellate, scattered with weak punctures, dull; facial fovea with lower end reaching basal margin of clypeus; cheeks narrower than eye seen in profile. Apical transverse groove of pronotum not notched in the middle; mesoscutum weakly tessellate and shiny with small, dense, a little roughened punctures; scutellum nearly smooth, shiny; propodeal enclosure large, well indicated, strongly wrinkled all over; mesepisternum shagreened anteriorly, densely tessellate posteriorly. Metasomal tergum

1 densely tessellate, impunctate (nearly smooth and shiny with scattered with fine punctures in *komachi*); tergum 2 and the following terga distinctly tessellate; posterior depressions of terga 2−4 narrower than in *komachi*.

Male. Body length 6.0−6.5 mm.

Pubescence: Hairs on head and thorax white; hairs on clypeus silvery white, dense, but shorter and sparser than in *komachi*. Metasomal terga 2−3 with white, lateral fringes, tergum 4 nearly without lateral fringe, tergum 6 with sparse, whitish hairs (slightly yellowish in *komachi*); metasomal sterna 2−5 without apical white fringes as in *komachi*.

Structure: Clypeus with apical half weakly roughened, weakly shiny with weak, roughened punctures; flagellum 1 longer than 2, and as long as 3; cheeks narrower than eye seen in propfile. Mesoscutum weakly tessellate with dense, roughened punctures. Metasomal tergum 1 tessellate, impunctate (metasomal tergum 1 nearly smooth with fine punctures in *komachi*); posterior depressions of metasomal terga weakly indicated.

Remarks: This is a sibling species of *Andrena komachi* Hirashima. But it is separable from *komachi* by the 1st metasomal tergum tessellate and impunctate, the metasomal sterna without dense, white fringes (clearly observed in male) and the male silvery hairs on the clypeus sparser and shorter.

Specimens examined: [JELKU] KOREA: 1♀, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, Kyon Sang Nam Do, 9.v.1991, O. Tadauchi; 1♂, ditto, 11.v.1991, O. Tadauchi; 1♂, Mt. Nogodan, San Nae Meon, Nam Weon Gun, Cheon-La Nam Do, 13.v.1991, O. Tadauchi; 89♀13♂, Jeong Lyong Chy, San Nae Meon, Nam Weon Gun, Cheon-La Nam Do, 14.v.1991, O. Tadauchi; 1♂, Mt. Komunorum, Pukcheju-gun, 22.iv.1997, O. Tadauchi; 5♂, Pijarim Forests, Pukcheju-gun, 24.iv.1997, J-c. Paik; 2♀1♂, Mt. Halla, 550 m, Haean-dong, 26.iv.1997, O. Tadauchi; 1♀, Mt. Halla, 550 m, Haean-dong, 26.iv.1997, J-c. Paik; 2♀1♂, High Resting Area, 1,100 m, Mt. Halla, 26.iv.1997, O. Tadauchi. JAPAN: Holotype ♀, Shirikishinai, Kamedagun, Hokkaido, 17.v.1964 (M. Munakata). [KEIU] KOREA: 7♀, GG Ganghwa Manisan, 28.iv.1996, HS Won; 1♀, GG Pocheon Wangbangsan, 29.v.1983, MS Joo; 1♀, GW ???, 16.v.1999, MR Kim; 1♀, GW Teabaek Yeonhwasan, 14.v.1997, MR Kim; 1♀, CB Yeongwol Baekdeoksan Gwaneumsa, 12.v.2001, SM Luy; 1♂, CN Magoksa, 23.iv.1983, MR Kim; 1♀, JB Muju Gucheon-dong, 30.v.1983, YS Lee; 6♂, JJ Yeongsil, 8.v.1983, MR Kim. [SNUE] KOREA: 1♀, Suwon GG, 14.iv.1994, HS Lee; 1♀, Anyang GG, 27.v.1990, JM Choi; 1♀, Arboretum COA Suwon GG, 12.v.1995, HR Lee. [QIAL] KOREA: 1♀1♂, Bukdaesa Mt. Odaesan GW, 10.iv.1996, HS Lee; 1♀, Piagol Mt. Jirisan JN, 22.v.1999, HT Lim; 2♀, Mt. Sinbulsan Yangsan GN, 27.iv.2003, HS Lee; 3♀, Euiguiri Namwon Namjejugun JJ, 21.iv.2006, HS Lee; 1♀, Sandpine CC, Gyeongpodong Gangreung GW, 28.iv.2007, HS Lee; 1♀, Odaesanjang GW, 24.iv.1997, HS Lee; 1♀, Cheongpung Jecheonsi CB, 9.v.2008, HS Lee; 3♀1♂, Mt. Gwangaksan Geuncheon Seoul, 4.v.2013, HS Lee.

Floral records: Korea: *Brassica campestris*, *Duchesnea chrysantha*, *Taruxacum* sp.. This species primarily associates with the flowers of *Potentilla*. Japan: 12 plants were recorded by Tadauchi (1985).

Distribution: Korea (Central, Southern. Jeju); Japan (Hokkaido, northern and central Honshu); China (Heilongjiang, Jilin Provs.).

Region: Eastern Palaearctic.

Korea: GG, GW, CB, CN, JB, JN, GN, JJ.

43. *Andrena* (*Micrandrena*) *semirugosa brassicae* Hirashima, 1957 (Pl. 14, Female: C; Male: D)

Yu-chae-ae-kkot-beol

Andrena (*Micrandrena*) *brassicae* Hirashima, 1957, 30: 52−53, Type: male, TL: Hokkaido, Japan; TD: JELKU.

Andrena (*Micrandrena*) *brassicae*: Tadauchi & Lee, 1992: 53 (first Korean record); Kim, 1996: 213; Tadauchi et al., 1997: 200 (in list); Lee & Paik, 2003: 132; Paek et al., 2010: 212.

Andrena (*Micrandrena*) *semirugosa brassicae*: Tadauchi and Xu, 1999, Esakia, (39): 14−15; Xu and Tadauchi, 2011: 281; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 130 [photos].

Description: Based on the redescription by Hirashima (1965).

Female. Body length 6−7 mm.

Pubescence: Hairs on body short, scanty; hairs on clypeus short, sparse, white; facial fovea bright, silvery, slightly brownish above; hairs on occiput and cheeks whitish to white. Hairs on mesoscutum scanty, very pale yellowish brown; dorsal fringe of propodeal corbicula rather scanty, composed of long, more or less well arranged, branched hairs; tibial scopa more or less compact, composed of short, somewhat well arranged, bright hairs which appear yellowish. Metasomal terga with sparse cilia slightly yellowish; posterior margins of 2nd and 3rd metasomal terga with lateral fringes of short, dense, appressed, white hairs; caudal fimbria bright, brownish.

Structure: Process of labrum slightly broader than long, with apex entire; clypeus well convex, tessellate all over, weakly and sparsely punctate; antennae moderately long, with 3rd segment about equal to next two segments together; cheeks about as broad as eyes seen in profile, rather receding, nearly weakly shagreened. Mesoscutum tessellate, scattered with weak punctures which are slightly weaker than those on clypeus, slightly shiny; propodeum densely rugulose or nearly roughened; enclosure large, a little more coarsely sculptured than dorsal face of propodeum, nearly rugose basally to rugulose apically. Metasomal terga densely tessellate, with sculpture becoming weaker toward apical terga, impunctate, feebly shiny; posterior depressions of 2nd to 4th terga more or less well indicated, more weakly sculptured than elsewhere of each tergum.

Male. Body length 5−6 mm.

Pubescence: Hairs on body short, scanty, nearly uniformly dull white except for brownish hairs on apical metasomal terga; head without brownish or black hairs; hairs on clypeus short, sparse, not forming covering of hairs apically. Hairs on mesoscutum sparse, occasionally indistinctly brownish. Posterior margins of 2nd and 3rd metasomal terga with lateral fringes of short, appressed, white hairs.

Structure: Process of labrum more or less trapezoid, reflected at tip; clypeus well convex, tessellate basally, weakly so or nearly smooth and shiny apically, with more or less dense, distinct punctures; antennae rather long, with 3rd segment as long as wide, about as long as or occasionally indistinctly longer than 4th; 5th indistinctly longer than broad; cheeks narrower than large eyes seen in profile, receding, nearly shagreened. Mesoscutum tessellate, weakly shiny, weakly and sparsely punctate with punctures weaker than those on clypeus; propodeal enclosure large, more strongly wrinkled than dorsal face of propodeum. Metasoma weakly shiny; 1st tergum weakly tessellate with microscopical, rather sparse to more or less dense punctures; 2nd weakly tessellate-punctate, the following terga tessellate with punctures hardly noticeable; posterior depressions more or less well indicated, impunctate.

Remarks: The first generation is characterized by having the brownish hairs on the head and the thorax (whitish in the 2nd), the mesoscutum tessellate (nearly smooth and shiny to weakly tessellate in the 2nd), and the 1st metasomal tergum weakly tessellate, impunctate (nearly smooth and shiny with small punctures in the 2nd).

Specimens examined: [JELKU] KOREA: 1♀, Dal Gung, San Nae Meon, Nam Weon Gun, Cheon-La Buk Do, 10.v.1991, O. Tadauchi; 1♀, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, Kyon Sang Nam Do, 11.v.1991, O. Tadauchi; 3♀, San Lyong Li, San Nae Meon, Nam Weon Gun, Cheon-La Buk Do, 12.v.1991, O. Tadauchi; 1♂, Sim Won Valley, San Nae Meon, Nam Weon Gun, Cheon-La Nam Do, 13.v.1991, T. Saigusa. [KEIU] KOREA: 15♀, JB Wanju Deadeoksan, 13.v.2000, JD Yeo; 12♀, JB Wanju Deadeoksan, 13.v.2000, MR Kim. [SNUE] KOREA: 2♀, GG Gunpo Jeongnanjongmyo, 9.v.2010, HS Lee; 1♀, GN Yangsan Baenaegol, 27.vi.2003, HS Lee; 1♀, GN Milyang Pyochungsa, 26.iv.2003; HS Lee; 2♀, GG Gunposi Surisan, 18.iv.2010, HS Lee; 2♀, JN Jirisan Simwon, 5.vi.1996, HS Lee. [QIAL] KOREA: 1♀, JB Jeongeupsi Naejangdong Naejangsangukripgongwon Ipamsanseongseupji, 15.vi.2010, JC Jeong; 13♀, GG Gunpo Jeongnanjongmyo, 9.v.2010, HS Lee; 1♀, GG Gunpo Jeongnanjongmyo, 15.v.2010, HS Lee; 1♀, Baenaegol, Yangsan GN, 27.vi.2003, Lee HS; 1♀, Pyochungsa Milyang GN, 26.iv.2003; Lee HS; 2♀, Mt. Surisan Gunpo GG, 18.iv.2010, Lee HS; 2♀, Simwon valley Mt. Jirisan JN, 5.vi.1996, Lee HS.

Floral records: Japan: 85 plants were recorded by Tadauchi (1985).

Distribution: Korea (Central, Southern); Japan (Hokkaido, Honshu, Sado Is., Shikoku, Kyushu, Tsushima Is., and Yakushima Is.); China (Qinghai, Gansu, Shannxi, Beijing, Shandong, Sichuan Provs.).

Region: Eastern Palaearctic.

Korea: GG, JB, JN, GN.

44. *Andrena* (*Micrandrena*) *sublevigata* Hirashima, 1966
(Pl. 14, Female: E; Male: F)
Hae-o-reum-ae-kkot-beol

Andrena (*Micrandrena*) *sublevigata* Hirashima, 1966, J. Fat. Agr., Kyushu Univ., 14: 91−92, 95, 117, Type: female, TL: Honshu, Japan, TD: JELKU [female and male]; Tadauchi, 1985, J. Fac. Agr., Kyushu Univ., 30: 65−67; Tadauchi, 1989, A Check List of Jap. Insects, 684; Tadauchi and Lee, 1992, Esakia, (32): 52 [Korea]; Tadauchi et al., 1997, Esakia (37): 195, 200 [Korea, in list]; Tadauchi et al., 2001, Esakia, (41): [in URL]; Gusenleitner and Schwarz, 2002, Entomofauna, 12 (suppl.): 725−726; Xu and Tadauchi, 2011, J. Fac. Agr., Kyushu Univ., 56: 281−282; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 131 [photos].

Andrena (*Micrandrena*) *sublevigata* Hirashima, 1966: 91, 95. Type: female; TL: Japan; TD: JELKU.

Andrena (*Micrandrena*) *sublevigata*: Tadauchi & Lee, 1992: 52 (first Korean record); Kim, 1996: 213; Tadauchi et al., 1997: 200 (in list); Gusenleitner and Schwarz, 2002: 725−726; Lee & Paik, 2003: 133; Paek et al., 2010: 212; Xu and Tadauchi, 2011: 281−282; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 131 [photos].

Description: Based on the description by Hirashima (1966).

Female. Body length 6.5 mm.

Pubescence: Hairs on face and clypeus sparse, dull grey; facial fovea silvery. Mesoscutum nude, only with inconspicuous, sparse, white hairs; scutellum with a few long, whitish hairs; propodeum broadly bare dorsally; propodeal corbicula scanty, whitish; hairs on legs silvery including trochanteral floccus and tibial scopa. Metasoma scanty of hairs, broadly nude basally; lateral white hair fringes of 2nd and 3rd terga scanty, less evident than in *brassicae*; caudal fimbria pale brownish, slightly more yellowish than in *brassicae*.

Structure: Process of labrum narrower than in *brassicae*; clypeus granular, dull, more punctate than in *brassicae*; 3rd antennal segment slightly longer than broad, shorter than 4th and 5th combined. Mesoscutum finely and weakly tessellate, distinctly shiny, scattered with microscopical punctures; scutellum slightly smoother than mesoscutum, more shiny; propodeal enclosure broad, not at all roughened or with weak rugae basally; propodeal enclosure much less coarsely sculptured than in *brassicae*; posterior halve of mesopleura granular, more coarsely sculptured than in *brassicae*. Metasoma impunctate, shiny; 1st tergum finely and weakly tessellate, nearly sculptured as in mesoscutum except punctuation; 2nd tergum slightly tessellate, 3rd nearly smooth, 4th smooth and more shiny; posterior depressions of intermediate terga weakly indicated.

Male. Body length 5.5 mm.

Pubescence: Hairs on head and thorax long, silvery white, not mixed with darker ones; hairs on clypeus downy, not dense on the middle. Hairs on mesoscutum sparser than those on mesopleura; hairs on legs primarily white. Metasoma scanty of hairs, only covered with short, fine, white hairs; 2nd and 3rd terga with fringe-like white hairs on the posterior margins; sterna with long white hairs.

Structure: Clypeus well convex, granular and rugoso-punctate with small punctures, without smooth shiny space; antennae not specially long; 3rd segment a little broader than long, about as long as or indistinctly shorter than 4th; 5th much longer than 4th, cheeks receding. Mesoscutum slightly more strongly tessellate than in female, not roughened; anterior portion of scutellum slightly smoother than mesoscutum; propodeal enclosure slightly more wrinkled than in female, distinctly less coarsely sculptured than in *kaguya*. Metasoma tessellate, but smoother than in posterior depressions of terga weakly indicated.

Remarks: It is distinctive by the mesoscutum finely tessellate and the propodeal enclosure slightly rugose only basally, widely granulate apically. It appears early in spring and abundantly visits *Brassica campestris* L. and *Salix* spp..

Specimens examined: [JELKU] KOREA: 1♀, San Lyong Li, San Nae Meon, Nam Weon Gun, Cheon-La Buk Do, 12.v.1991, O. Tadauchi; 1♀1♂, Sim Won Valley, San Nae Meon, Nam Weon Gun, Cheon-La Nam Do, 13.v.1991, O. Tadauchi; 1♂, Jeong Lyong Chy, San Nae Meon, Nam Weon Gun, Cheon-La Nam Do, 14.v.1991, T. Saigusa. JAPAN: Holotype female, and paratopotype male, Fukuchiyama Farm, Takeda CIC, Honshu, Japan, 12.iv.1963 (Y. Hirashima). [KEIU] KOREA: 1♀, CN Cheonan Dongmyeon Sunamri, 4.v.1974, BH Choi; 1♀, GG Aengmubong, 15.iv.1984, MR Kim. [SNUE] KOREA: 1♂, Suwon GG, 16.iv.1990, KU Chun; 1♂, Suwon GG, 26.iii.1990, HJ Kim; 1♂, Nobo Andong GB, 1.v.1994, JY Lee. [QIAL] KOREA: 1♀, Suwon GG, 29.iv.2001, HS Lee; 1♀, Seodundong Suwon GG, 3.iv.2002, JD Yeo; 1♀, Seodundong Suwon GG, 4.iv.2002, YB Lee; 1♀, Seodundong Suwon GG, 4.iv.2002, AJ Go; 1♀, Baekdamsa Yongdaeri Bukmyeon Inje GW, 13.v.2010, JC Jeong; 1♀, Bukbang Hongcheon GW, 22.iv.1997, HS Lee; 1♂, BaeNeomeo Hill, Seolmaejae Yangpyeong, 15.v.2010, HA Lee.

Floral records: Japan: 37 plants were recorded by Tadauchi (1985).

Distribution: Korea (Central, Southern); Japan (Hokkaido, Honshu, Sado Is., Shikoku, Kyushu);

China (Beijing, Hebei, Gansu, Hubei, Jiangsu, Zhejiang, Shanghai Provs.).

Region: Eastern Palaearctic.

Korea: GG, GW, CN, GB, GN, JB.

Subgenus *Oreomelissa* Hirashima et Tadauchi, 1975

Oreomelissa Hirashima et Tadauchi, 1975: 175−177. TS: *Andrena mitakensis* Hirashima, 1963, by original designation.

45. *Andrena* (*Oreomelissa*) *amurensis* Friese, 1922 (Pl. 15, Female: A; Male: B)
Geum-gang-ae-kkot-beol

Andrena amurensis Friese, 1922, 1: 212, Type: female, TL: Amur, Russia; TD: ZMHB.

Andrena (*Oreomelissa*) *amurensis*: Osytshnjuk, 1995, vol. IV. Part 1, 494, 5 17 [female, male, in key, Russian Far East]; Tadauchi et al., 1997, (37): 199−201 [redescription of female, N. Korea, Mt. Geumgansan]; Xu et al., 2000, (40): 44 [China]; Gusenleitner & Schwarz, 2002: 82; Lee & Paik, 2003: 133; Paek et al., 2010: 213.

Andrena (*Oreomelissa*) *mitakensis* Hirashima & Tadauchi, 1975: 178 (in part, first Korean record).

Description: Based on the redescription by Tadauchi et al. (1997).

Female. Body length 10 mm.

Pubescence: Hairs on head short, sparse; those on clypeus sparse brown; those on antennal area short, sparse, whitish; those on vertex black; those on cheeks whitish; facial fovea brown. Hairs on mesoscutum whitish mixed with brown; those on scutellum dense, whitish posteriorly: those on mesepisternum long and sparse, whitish; propodeal corbicula poor with sparse dorsal fringes, with internal simple dull whitish hairs; tibial scopa more or less loose, composed of long, dark brown simple hairs. Hairs on metasomal terga scanty; T2−4 with well-formed apical white hair bands, interrupted on T2; caudal fimbria brown; S2−5 with subapical fimbriae, yellowish.

Structure: Vertex strongly roughened by deep, coarse punctuation; facial fovea deep, extending a line running between lower margins of antennal fossae, separated from inner margin of eye by smooth punctate space; clypeus slightly convex, weakly tessellate and shiny, surface with crowded Punctures; process of labrum small, short and triangular; cheeks narrower than eye, surface weakly tessellate posteriorly, coarsely punctate near eye. Pronotum with weak humeral angle, without dorsoventral ridge. surface weakly tessellate with crowded Punctures; mesoscutum and scutellum finely tessellate with punctures denser posteriorly; propodeal enclosure weakly rugulose at basal half, finely tessellate at apical half; dorsal face of propodeum finely tessellate and feebly shiny with shallow Punctures. Metasomal terga smooth to weakly tessellate, shiny; T1 with minute punctuters, irregular in distribution; T2−4 with close punctures; posterior depressions of terga not well indicated; pygidial plate U-shaped with weak internal triangular area; S2−5 finely tessellate, impunctate apically.

Male. No record from Korea.

Remarks: This species is separated from *Andrena mitakensis* Hirashima by the face above antennal fossae strongly roughened, the vertex with distinct PP; the pronotum with humeral angle and the metasomal terga with close PP in female (Xu et al., 2000).

Specimens examined: [JELKU] KOREA: 1♀, Mt. Kongo, Kogendo, Korea, 10.ix.1931, C. Takeya.

Floral records: Not available.

Distribution: Korea (Central); Russia (Far East area); China (Jilin Prov.).

Region: Eastern Palaearctic.

Korea: GW.

46. *Andrena* (*Oreomelissa*) *kamikochiana* Hirashima, 1963
(Pl. 15, Female: C; Male: D)
So-geum-gang-ae-kkot-beol

Andrena (*Calomelissa*) *kamikochiana* Hirashima, 1963, 12: 251, Type: female, TL: Honshu, Japan; TD: JELKU.

Andrena (*Oreomelissa*) *kamikochiana*: Tadauchi et al., 1997: 201 (first Korean record); Gusenleitner & Schwarz, 2002: 381; Lee & Paik, 2003: 133; Paek et al., 2010: 213; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 135 [photos].

Description: Based on the description by Hirashima (1963).

Female. Body length 8.5 mm.

Pubescence: Hairs on head and thorax short to more or less long, sparse, those on metasoma short, scanty. Hairs on head, including those on scapes brownish to brown except for whitish hairs on occiput and cheeks below: facial fovea entirely blackish, bright and blackish brown in some light. Hairs on mesoscutum brown; hairs on scutellum brown anteriorly, long and paler laterally; dorsal fringe of propodeal corbicula scanty, not well a rranged; tibial scopa large, composed of long dense, simple hairs; tibial scopa brown, narrowly silver white in front. Disc of 1st tergum bare; cilia on 2nd and the following terga brownish; caudal fimbria blackish brown; posterior margin of 2nd tergum with lateral, that of 3rd with more broad, that of 4th with more broad or nearly contiguous fringes of short, appressed, white hairs; hairs on metasomal sterna brownish.

Structure: Process of labrum small, nearly triangular with apex roundly convex; clypeus well convex, shagreened with an indication of coarse punctures; facial fovea deep, separated from eye by a narrow raised space, with upper end occupying more than one-half of distance between orbit and post ocellus; antennae with 3rd segment approximately as long as 4th plus 5th which are broader than long, respectively; vertex well developed, arched in front view, densely tessellate or nearly weakly shagreened, impunctate; cheeks about as broad as eyes seen in profile, rather convex, broadly tessellate posteriorly. Mesoscutum tessellate, more densely so anteriorly, very weakly and more or less densely punctate, feebly shiny; dorsal face of propodeal enclosure large, nearly triangular, densely and weakly wrinkled basally, nearly shagreened apically. Metasoma shiny; 1st to 4th metasomal terga microscopically tessellate, scattered with microscopical fine punctures; posterior depressions of metasomal terga hardly indicated medially.

Male. Body length 7.5 mm.

Pubescence: Hairs on head and thorax short to more or less long, not dense, those on metasoma short, scanty. Hairs on clypeus sparse, suberect, white; hairs on the rest of head slightly more dense, white or whitish on lower paraocular areas and cheeks below, brownish to brown on face, frons, vertex and cheeks above. Hairs on mesoscutum and scutellum long, nearly uniformly brownish, or whitish on mesoscutum anteriorly and on scutellum posteriorly; hairs on propodeum and mesopleuron white. Metasomal tegrum 1 hairy only laterally; cilia on 2nd and the following terga brownish; hairs on 5th and 6th terga brownish; 2nd and 3rd terga with lateral fringes of somewhat sparse, suberect. white hairs posterioriy; similar and less evident hairs present on posterior margin of 4th tergum laterally; metasomal sterna with nearly white hairs.

Structure: Process of labrum almost protuberant; clypeus slightly convex, nearly smooth, shiny, sparsely and weakly punctate; antennae with 3rd segment about twice as long as broad, about as long as 4th plus 3th; 4th segment slightly broader than long, 5th approximately as long as broad, 6th and the following segments longer than broad; vertex well developed, arched in front view, densely tessellate or nearly shagreened; cheeks broader than eyes seen in profile, well convex above, very slightly receding below. Mesoscutum tessellate, densely so anteriorly and weakly so or narrowly, nearly smooth medially, sparsely and weakly punctate with punctures; propodeal enclosure large, nearly triangular, weakly wrinkled basally, shagreened elsewhere; lateral face of propodeum slightly less tessellate and a little more shiny than dorsal face of propodeum. Metasoma shiny; 1st tergum smooth, scattered with microscopical fine punctures; 2nd tergum tessellate basally, smooth apically, with punctures about as strong as or a little more larger than those on 1st; 3rd tergum a little more tessellate basally than in 2nd; 4tn and 5th terga with punctures obsolescent; posterior depressions of terga very weak, hardly indicated medially.

Remarks: This species is similar to *Andrena submontana* Wu in having the shagreening clypeus, but it can be separated from *submontana* by the hind femora without a row of spines in female.

Specimens examined: [JELKU] KOREA: 1♀, Mt. Kongo, Korea, 18.viii.1940, T. Shirozu. JAPAN: Holotype male, allotopotype female, Kamikochi, Kagano Pre, 9.viii.1957, R. Ishikawa.

Floral records: Japan: *Solidago virga-aurea* L.

Distribution: Korea (Central); China (Hebei, Heilongjiang, Jilin Provs.); Mongolia (Somon); Japan (Honshu); Russia (Far East area).

Region: Eastern Palaearctic.

Korea: GW.

Subgenus *Plastandrena* Hedicke, 1933

Plastandrena Hedicke, 1933, Mitt. Zool. Mus. Berlin, 19: 217−218. TS: *Melitta tibialis* Kirby, 1802, by original designation.

47. *Andrena* (*Plastandrena*) *japonica* (Smith, 1873) (Pl. 15, Female: E; Male: F)
Il-bon-ae-kkot-beol

Nomia japonica Smith, 1873, Trans. Ent. Soc. London, 1873: 201 [female, Japan]. Type: female; TL: Japan; TD: BMNH.
Andrena japonica: Meado-Waldo, 1916, Ann. Mag. nat. Hist., (8)17: 462; Yasumatsu, 1941, Peking nat. Hist. Bull., 15: 277 [in list].
Andrena mitsukurii Cockerell, 1913, Ann. Mag. nat. Hist., (8)11: 186 [male, Japan]; Yasumatsu, 1941, Peking nat. Hist. Bull., 15: 278 [in list].
Andrena (*Glyphandrena*) *mitsukurii*: Hedicke, 1933, Mitt. Zool. Mus. Berlin, 19: 213.
Andrena (*Mitsukuriella*) *japonica*: Hirashima, 1965, J. Fac. Agr., Kyushu Univ., 13: 472−476; Hirashima, 1966, J. Fac. Agr., Kyushu Univ., 14: 96, 116 [female & male, in key]; Kim and Kim, 1983, Kor. J. Ent., 13: 6 [Korea]; Tadauchi, 1989, A Check List Jap. Insects, 684.
Andrena fukaii Cockerell, 1914, Ann. Mag. nat. Hist., (8)13: 279 [female, Japan]; Yasumatsu, Peking nat. Hist. Bull., 15: 276.
Andrena (*Glyphandrena*) *fukaii*: Hedicke, 1933, Mitt. Zool. Mus. Berlin, 19: 213.
Andrena (*Mitsukuriella*) *fukaii*: Hirashima, 1965, J. Fac. Agr., Kyushu Univ., 13: 476−478; Hirashima, 1966, J. Fac. Agr., Kyushu Univ., 14: 96, 116 [female & male, in key]; Tadauchi, 1989, A Check List Jap. Insects, 684.
Andrena (*Plastandrena*) *japonica*: Tadauchi et al., 2001, Esakia, (41): [in URL]; Gusenleitner & Schwarz, 2002, Entomofauna, (Suppl. 12): 378−379; Xu and Tadauchi, 2011, J. Fac. Agr., Kyushu Univ., 56: 64−65; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 138 [photos].

Description: Based on the redescription of Hirashima (1965).

Female. Body length 12 mm.

Pubescence: Hairs on body scanty; hairs on clypeus sparse, fine, those on sides of face dense, those on occiput and cheeks short, white; hairs on frons, vertex and cheeks above brown; facial fovea deep brown above, whitish below. Hairs on mesoscutum short, not specially dense, brown or fuscous, paler on periphery; hairs on propodeum and on sides of thorax nearly dull white or faintly yellowish; propodeal corbicula with dorsal fringe of short, not well arranged, more or less dense hairs; tibial scopa nearly silver white or faintly yellowish, brown above basally; tibial scopa large, compact, composed of well arranged, long hairs. Metasomal terga 1 with long, the following three terga with short, somewhat dense, dull white to slightly brownish hairs; posterior margin of 4th tergum with a nearly entire band of short, snow white hairs which is not always distinct, occasionally lacking; caudal fimbria blackish brown, whitish laterally.

Structure: Process of labrum moderate in size, slightly reflected at apex; clypeus well convex, very closely and more or less coarsely punctate, with a trace of median line; antennae with 3rd segment longer than next two segments together; cheeks about as broad as eyes, rather convex, nearly smooth and shiny above, with punctures becoming denser and coarser beneath. Mesoscutum nearly smooth and shiny, rather strongly punctate with punctures irregular in distribution; propodeum strongly roughened and quite coarsely sculptured, enclosure strongly and coarsely carinate, strongly carinate posteriorly; posterior spur of hind tibia widened basally. Metasomal terga quite closely and rather strongly punctate or occasionally punctures weak and rather sparse; interspaces of punctures smooth and shiny; bases of 2nd to 4th terga deeply concave; posterior margins of 1st to 4th terga sharply constricted subapically, strongly (summer form) to moderately (spring form)

reflected apically, impunctate.

Male. Body length 10−12 mm.

Pubescence: Hairs on head especially those on face and cheeks below, more or less long and dense, hairs on clypeus dull white, usually mixed with sparse to dense brownish hairs; hairs on sides of face, frons and cheeks near eyes brownish to fuscous. Hairs on mesoscutum short, not dense, brownish to fuscous; hairs on propodeum long more or less dense, with or without admixture of sparse to dense brown hairs. Hairs on metasomal terga dense, those on 1st long, those on the following terga shorter, erect to suberect; hairs on basal three terga dull white, those on 4th tergum white and brown, those on the following terga brown to fuscous; posterior margin of 4th tergum with fringe-like, short, white hairs in fresh specimens.

Structure: Process of labrum more or less small, slightly emarginate and reflected at tip; clypeus well convex, quite densely and coarsely rugoso-punctate; antennae long, with 3rd segment slightly longer than wide, indistinctly longer than 4th and about as long as 5th; cheeks narrower than large eyes seen in profile, much receding, weakly punctate and shiny. Mesoscutum somewhat strongly and coarsely punctate with punctures irregular in distribution, interspaces smooth and shiny; propodeum quite coarsely sculptured; enclosure strongly and irregularly carrinate. Metasomal terga densely and strongly punctate; posterior margins of 1st to 4th metasomal terga strongly reflected above in summer form, impunctate; bases of intermediate terga deeply concaved basally.

Remarks: This species has two generations a year. It is recognized by the metasomal terga coarsely punctate and unusually reflected apically in the summer form, but less reflected in the spring form.

Specimens examined: [SNUE] KOREA: 1♀, Piagol Mt. Jirisan JN, 10.viii.1978, BE3. [QIAL] KOREA: 1♀, Cheongryang Bonghwa GB, 29.v.2010, HS Lee; 1♀, Mt. Odaesan Jinbu Pyengchang GW, 30.v. 1996, HS Lee; 1♀, Hagyedong Nowon Seoul, 13.v.1996, SH Jo.

Floral records: Japan: *Daucus carota* L.; *Ligustrum japonicum* Thunberg.

Distribution: Korea (Central, Southern); Japan (Hokkaido, Honshu, Shikoku, Kyushu).

Region: Eastern Palaearctic.

Korea: GG, GW, GB, JN.

48. *Andrena* (*Plastandrena*) *magnipunctata* Kim et Kim, 1989
(Pl. 16, Female: A)
Keun-jeom-ae-kkot-beol

Andrena (*Plastandrena*) *magnipunctata* Kim et Kim, 1989: 201, Type: female, TL: Korea, TD: KEIK.
Andrena (*Plastandrena*) *magnipunctata*; ESK & KSAE, 1994: 266; Kim, 1996: 214; Tadauchi et al., 1997: 195−196 (Jejudo); Gusenleitner & Schwarz, 2002: 452; Lee & Paik, 2003: 133; Xu and Tadauchi, 2011: 66; Paek et al., 2010: 213.

Description: Based on the description of Kim (1989) and Tadauchi et al. (1997).

Female. Body length 12 mm.

Pubescence:

Male. Body length 9.8 mm.

Pubescence: Hairs on head and thorax dense, fulvous; hairs on clypeus dense; those on vertex paler, those on cheeks long, dense posteriorly. Hairs on metasomal terga whitish; those on T1 long; those on T2−3 short; T2−4 with complete, dense whitish hair bands apically; those on T3−5 with short, brownish hairs; S2−5 with short, dense, yellowish hairs, subapical area with weak, not well-formed fimbriae.

Structure: Vertex weakly tessellate with close punctures, shagreening medially; clypeus slightly convex, surface weakly tessellate, weakly shiny with crowded punctures, smaller at extreme angle area; process of labrum trapezoidal, surface with weak transverse rugulae, deeply emarginate apically; cheeks about equal to eye, surface weakly tessellate posteriorly, smooth and shiny with punctures. Mesoscutum weakly tessellate and feebly shiny, surface with punctures; propodeal enclosure coarsely wrinkled all over with a carina posteriorly; dorsal face roughened with coarse punctures. Metasomal terga smooth and shiny, Tl with sparse punctures at basal area, denser at apical area; posterior depressions of terga well indicated.

Remarks: This species is similar to *Andrena transbaicalica* Popov, but is different from *transbaicalica* by the process of labrum deeply emarginate and the mesoscutum and metasomal terga densely punctate in male.

Specimens examined: [JELKU] KOREA: 1 male, JJ Pijarim Forests, Pukcheju-gun, 24.iv.1997, O. Tadauchi. [KEIU] KOREA: 1♀, GG Singal, 14.vi.1975, DI An; 1♀, GG Aengmubong, 16.vi.1974, OJ Lee; 1♀, GG Aengmubong, 9.v.1976, GH Lee; 1♀, GG Aengmubong, 9.v.1996, SB Baek; 1♀, GG Yangpyeong, 8.viii.1970, JI Kim; 1♀, GG Wangbangsan, 16.v.1982, ML Kim; 1♀, GG Wangbangsan, 16.v.1982, PK Chung; 1♀, GG Ilyeing, 11.iv.1996, SH Nam; 1♂, GG Cheonmasan, 3.iv.1961, GS Kim; 1♀, GG Cheonmasan, 6.vi.1961, ??; 1♀, GG Cheonmasan, 25.v.1962, WJ Kim; 1♀, GG Cheonmasan, 25.v.1962, UO Jo; 1♀, GG Cheonmasan, 10.v.1975, SI Oh; 1♂, GG Chukryeongsan, 1.v.1999, SM Lyu; 1♀, GG Paldang, 14.v.1961, JU Jeong; 1♂, GG Pocheon Backnsan, 10.v.1997, EY Lee; 1♂, GG Pocheon Backnsan, 10.v.1997, NH Kim; 1♂, GG Pocheon Wangbangsan, 23.v.1976, HS Sim; 3♂, GW Gapyeong Myeongjisan Seungcheonsa, 5.v.2001, MR Kim; 1♂, GW Sokcho Seolak-dong Biseondae, 19.v.2001, JG Kim; 1♂, GW Cheolwon Galmal Sincheolwon-ri Myeongseongsan, 16.v.1999, MR Kim; 1♀, GW Chiaksan 8.vi.1974, HY Kang; 1♂, GW Chiaksan, 29.vii.1975, CW Kim; 1♀, GW Chiaksan, 3.viii.1982, BJ Kim; 1♀, GW Chiaksan, 2.viii.1982, SH Bang; 1♀, GW Chiaksan, 5.vi.1992, HS Gwan; 6♂, CB Goesan Joryeongsan, 18.v.1997, MR Kim; 2♀, CB Sokrisan, 11.viii.1983, MR Kim; 9♂, CB Yeongwol Baekdeoksan Gwaneumsa, 12.v.2001, SM Lyu; 1♂, CN Gongju Gyeryongsan Gapsa, 5−7. vi.1997, SJ Park; 1♂, GB Sobaeksan Birosa, 5.v.1999, SM Lyu; 1♂, JB Muju Gucheon-dong, 21.v.1983, BK Kim; 1♀, JJ Gamnyeong, 9.v.1983, MR Kim.

Floral records: Korea: *Brassica campestris*.

Distribution: Korea (central and southern Korea, Jeju Is.); China (Beijing, Heilongjiang Prov.).

Region: Eastern Palaearctic.

Korea: GG, GW, CB, CN, GB, JB, JJ.

49. *Andrena* (*Plastandrena*) *transbaicalica* Popov, 1949
(Pl. 16, Female: B; Male: C)
Gi-ma-ae-kkot-beol

Andrena (*Plastandrena*) *transbaicalica* Popov, 1949, 30: 398, Type: female, TL: M. Siberia, Russia; TD:

ZISP.

Andrena (*Plastandrena*) *transbaicalica*: Tadauchi et al., 1997: 200 (in list); Gusenleitner & Schwarz, 2002: 772−773; Lee & Paik, 2003: 133; Paek et al., 2010: 213; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 139 [photos].

Andrena (*Plastandrena*) *astragalina* Hirashima, 1957: 51 (Japan); Tadauchi & Lee, 1992: 56 (first Korean record).

Description: Based on the redescription of *A. astragalina* by Hirashima (1965).

Female. Body length 13 mm.

Pubescence: Hairs on head and thorax dense, not specially long, distinctly shorter than in *tibialis*. Hairs on face, including clypeus, more or less dense, dull white; hairs on frons, vertex and cheeks above brownish; hairs on cheeks and occiput longer than those on clypeus, dull white; hairs on head much paler than in *tibialis*. Hairs on mesoscutum and scutellum short sparse, pale yellowish brown, much paler than in *tibialis*; hairs on propodeum pale to dull white; dorsal fringe of propodeal corbicula not specially long, not specially well arranged in a compact fringe; hairs on outer faces of tibiae and basitarsi of fore and mid legs glistening, slightly brownish, much paler than in *tibialis*. Hairs on metasoma much sparser and shorter than in *tibialis*; hairs on 1st metasomal tergum fine, long, sparse, white; hairs on 2nd much shorter, white; cilia, on 3rd and 4th white, nearly bare medially; posterior margin of 2nd with lateral, that of 4th with more broad or nearly contiguous, white fringes of short, not specially dense, nearly appressed hairs; caudal fimbria glistening brown.

Structure: Process of labrum not specially large, nearly trapezoid, nearly entire at apex; clypeus well convex, densely and strongly punctate with punctures sparser and interspaces much more shiny than in *tibialis*; antennae with 3rd segment a little longer than 4th plus 5th; cheeks broader than eyes seen in profile, rather receding, nearly tessellate- punctate. Mesoscutum densely tessellate anteriorly, nearly smooth medially, more or less strongly punctate with punctures irregular in distribution; propodeum strongly roughened; enclosure defined by a more or less distinct carina which bounds apex of enclosure as well, feebly shiny, finely nearly rugulose, and sparsely and irregularly wrinkled; posterior spurs of hind tibiae widened basally. Metasomal terga smooth, distinctly shiny (more shiny than in *tibialis*), quite weakly and sparsely punctate with punctures weaker and sparser than in *tibialis*; intermediate terga with somewhat coarse longitudinal rugae; posterior depressions of intermediate terga broad, more or less sharply indicated, much less so than in *tibialis*, quite feebly punctate.

Male. Body length 11.5 mm.

Pubescence: Hairs on head and thorax long, more or less abundant, much paler than in *tibialis*; those on metasoma scanty. Hairs on head nearly dull white except for brown hairs on sides of face, frons, and cheeks above. Hairs on thorax uniformly pale, without admixture of brownish ones; hairs on legs pale to yellowish. Hairs on metasomal terga much sparser and shorter than in *tibialis*, pale to slightly yellowish, without admixture of brown hairs; posterior margins of intermediate metasomal terga without distinct hair fringes.

Structure: Process of labrum transverse, slightly reflected apically; clypeus well convex, more shiny than in *tibialis*; antennae elongate, 3rd segment approximately one and one-half times as long as broad, slightly shorter than 4th which is subequal to next segment; spaces between eye and post ocelli deeply concave; cheeks slightly broader than eye seen in profile, much more receding than in *tibialis*, nearly rugulose posteriorly. Mesoscutum tessellate, weakly so medially, strongly punctate with punctures irregular in distribution, much larger than those on clypeus; propodeum strong-

ly roughened; enclosure defined by a weak carina, irregularly wrinkled. Metasomal terga nearly smooth, shiny, feebly and sparsely punctate; metasomal terga smoother, therefore more shiny and less punctate than in tibinlis; posterior depressions of terga well indicated.

Remarks: This species is similar to *Andrena tibialis* (Kirby) in having sparse punctures on metasomal terga, but it differs by the entire process of labrum and the metasomal terga scanty hairs in female (Xu and Tadauchi, 2011).

Specimens examined: [JELKU] KOREA: 2♂, GN Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, 9.v.1991, K. Morimoto; 1♂, ditto, 12.v.1991, T. Saigusa; 1♂, ditto, 15.v.1991, T. Saigusa. [QIAL] KOREA: 1♀, GW Hongcheon Bulbang, 22.iv.1997, HS Lee.

Floral records: Japan: *Astragalus sinicus*, *Brassica campestris*. China: *Taraxacum* sp..

Distribution: Korea (central, Southern); China (Heilongjiang Prov.); Japan (Hokkaido, Honshu, Kyushu); Russia (middle Siberia, Far East area).

Region: Eastern Palaearctic.

Korea: GW, GN.

Subgenus *Poecilandrena* Hedicke, 1933

Subgenus *Poecilandrena* Hedicke, 1933: 218. TS: *Andrena labiata* Fabricius, 1781, by original designation.

50. *Andrena* (*Poecilandrena*) *fukuokensis* Hirashima, 1952
(Pl. 16, Female: D; Male: E)
Gu-ju-ae-kkot-beol

Andrena (*Micrandrena*) *fukuokensis* Hirashima, 1952, 23: 39−41 [Japan], Type: male; TL: Kyushu, Japan; TD: JELKU.

Andrena (*Poecilandrena*) *fukuokensis*: Kim & Kim, 1983a: 6 (first Korean record); ESK & KSAE, 1994: 266; Kim, 1996: 214; Tadauchi et al., 1997: 196−197 (Jejudo); Tadauchi and Xu, 2000,: 82−83; Gusenleitner & Schwarz, 2002, Entomofauna, (Suppl. 12): 290−291; Lee & Paik, 2003: 133; Paek et al., 2010: 213; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 140 [photos].

Andrena (*Poecilandrena*) *leleji* Osytshnjuk, 1981, In Hymenoptera of the Far East: 113 [Russian Far East].

Description: Based on the redescription by Hirashima (1965).

Female. Body length 8 mm.

Pubescence: Hairs on full body nearly concolorous, golden to bright fulvous, nowhere mixed with darker hairs; facial fovea bright, golden in some light; hairs on head short, those on clypeus more or less fine and sparse. Hairs on mesoscutum short, dense but not conspicuous; hairs on posterior margins of mesoscutellum longer and more conspicuous; dorsal fringe of propodeal corbicula long, not well arranged; tibial scopa bright golden, compact, composed of moderately long,

well arranged hairs. Metasoma scanty of hairs; cilia on terga becoming longer toward apical terga; hairs on posterior margins of 2nd to 4th terga more dense than elsewhere, forming indistinct lateral (nearly complete on 4th) fringes; caudal fimbria bright golden.

Structure: Process of labrum large, transverse, with apical margin nearly straight; clypeus more or less well convex, densely tessellate, weakly and rather sparsely punctate with a trace of median, longitudinal, broad, impunctate space; facial fovea narrow; antennae short, with 3rd segment as long as next two segments together; 4th segment distinctly broader than long, the following segments becoming elongate and widened toward penultimate segment which is a little broader than long; cheeks a little broader than eyes seen in profile, convex, densely tessellate or nearly shagreened. Mesoscutum densely tessellate, with weak and close punctures; propodeum shagreened or nearly roughened; enclosure large, triangular, interior coarsely wrinkled or rugose nearly all over; lateral face of propodeum reticulate. Metasoma broad; 1st tergum microscopically tessellate, very densely punctate with punctures; posterior margin of 1st tergum narrowly impunctate; 2nd tergum nearly as in 1st but posterior portion with punctures weaker and sparser; 4th tergum nearly impunctate; posterior depressions of terga broad, not sharp but more or less well indicated.

Male. Body length 7 mm.

Color: Black; clypeus entirely pale yellow.

Pubescence: Hairs on head and thorax short to more or less long, not dense, those on metasoma short, not conspicuous. Hairs on clypeus downy apically, white; hairs on head primarily white to slightly yellowish. Hairs on thorax above pale to pale yellowish brown, darkest on scutellum posteriorly, those on thorax below pale to white. Cilia on metasomal terga nearly white or slightly yellowish; hairs on posterior margins of metasomal terga slightly more dense than elsewhere; posterior margins of 2nd and the following sterna each with a complete fringe of more or less well arranged, suberect, bright, whitish hairs.

Structure: Process of labrum transverse, slightly convex apically; clypeus well convex, tessellate, weakly and more or less densely punctate; antennae more or less long, with 3rd segment about one and one-half times as long as broad, shorter than next two segments together; 4th segment broader than long; 5th segment nearly as long as broad; cheeks about as broad as eyes seen in profile, its outline distinctly convergent posteriorly seen from above, weakly nearly shagreened. Mesoscutum tessellate, weakly and sparsely punctate with punctures weaker than those on clypeus; scutellum tessellate or weakly nearly shagreened posteriorly, more weakly punctate than in mesoscutum; propodeum nearly roughened; enclosure broadly wrinkled, narrowly rugulose apically. Metasoma shiny; 1st tergum finely and closely punctate; 2nd tergum a little more sparsely punctate than in 1st; 3rd tergum with punctures much sparser and weaker than those on 2nd; 4th and 5th terga nearly impunctate; posterior depressions of terga not well indicated.

Remarks: This species is similar to *Andrena labiata* Fabricius. But the female differs from that of *labiata* in having the more wrinkled propodeal enclosure, the more tessellated clypeus and the black metasomal terga. The male differs from that of *labiata* in having the smaller maculae on paraocular area and the flat 6th sternum (Tadauchi and Xu, 2000).

Specimens examined: [JELKU] KOREA: 1♂, Mt. Kornunorum, Pukcheju-gun, 22.iv.1997, O. Tadauchi; 1♀, Sanisu-dong, Namjeju-gun, 23.iv.1997, O. Tadauchi; 5♀, Chonjiyen Waterfall, Sogwipo-shi, 25.iv.1997, O. Tadauchi. [KEIU] KOREA: 1♀, GG Ui-dong, 15.iv.1969, JH; 1♀, GG Hongreung, 25.iv.1961, JH; 1♀, GG Ganghwa Manisan, 28.iv.1996, HS Won; 5♀5♂, GG Bogwangsa, 17.iv.1983, MR Kim; 1♀, GG Bogwangsa, 17.iv.1983, KSJ; 1♀, GG Bogwangsa, 17.iv.1983, HS Park; 1♂, GG Bogwangsa, 17.iv.1983, JS Cho; 1♀, GG Bogwangsa, 17.iv.1983, JH Han; 2♀1♂, GG

Bogwangsa, 17.iv.1983, JW Lee; 1♀, GG Aengmubong, 6.v.1973, JI Kim; 1♀, GG Wangbangsan, 23.v.1976, JH Ryu; 4♀, GG Pocheon Idong Dopyeong-ri Myeongseongsan, 16.v.1999, MR Kim; 1♀, GG Pocheon Gangssibong , 2.v.1997, MR Kim; 1♀, GG Pocheon Gangssibong, 2.v.1997, JD Yeo; 1♀, GG Pocheon Idong Dopyeong-ri Myeongseongsan, 16.v.1999, JD Yeo; 1♀, GG Gapyeong Myeongjisan Seungcheonsa, 5.v.2001, MR Kim; 1♀, GW Cheolwon Galmal Sincheolwon-ri Myeongseongsan, 16.v.1999, MR Kim; 1♀, CB Cheongju Guksabong, 17.v.1997, MR Kim; 1♀, CN Seosan Gayasan, 2.v.1997, MR Kim; 1♀, JB Muju Gucheon-dong, 22.v.1983, BS Choi.

Floral records: Korea: *Duchesnea chrysantha*, *Brassica campestris*.

Distribution: Korea (Central, Southern, Jeju); China (Shanghai, Jiangsu, Zhejiang, Heilongjiang Prov.); Japan (Honshu, Shikoku, Kyushu, Tsushima); Russia (Far East area).

Region: Eastern Palaearctic.

Korea: GG, GW, CB, CN, JB, JJ.

Subgenus *Simandrena* Pérez, 1890

Simandrena Pérez, 1890: 174. TS: *Andrena propinqua* Schenck, 1853 (=*Melitta dorsata* Kirby, 1802), by subsequent desdignation of Hedicke, 1933.

51. *Andrena* (*Simandrena*) *kerriae* Hirashima, 1965 (Pl. 17, Female: A; Male: B)
Kko-ma-heo-ri-ae-kkot-beol

Andrena (*Simandrena*) *kerriae* Hirashima, 1965, J. Fat. Agr., Kyushu Univ., 13: 499−500, Type: female, TL: Honshu, Japan, TD: JELKU [female; Japan]; Hirashima, 1966, J. Fat. Agr., Kyushu Univ., 14: 106 [in key]; Tadauchi and Hirashima, 1983, Esakia, (20): 87−89 [male, Japan]; Tadauchi, 1989, A Check List of Jap. Insects, 685; Tadauchi & Lee, 1992, Esakia, (32): 51 [Korea]; Tadauchi & Xu, 1995, Esakia, (35): 217 [China, Korea]; Osytshnjuk, 1995, Key Insects of Russian Far East vol. IV. Part 1, 508, 524 [female, male, in key, Russian Far East]; Tadauchi et al., 1997, Esakia, (37): 200 [Korea]; Tadauchi et al., 2001, Esakia, (41): [in URL]; Gusenleitner & Schwarz, 2002, Entomofauna, (Suppl. 12): 382−383; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 144 [photos].
Andrena (*Simandrena*) *kerriae* Hirashima: 499. Type: female; TL: Japan; TD: JELKU.

Description: Based on the description by Hirashima (1965) and Tadauchi and Hirashima (1983).

Female. Body length 9 mm.

Pubescence: Hairs on head whitish, not specially dense, slightly yellowish on cheeks and occiput. Hairs on thorax above pale fulvous, not mixed with darker ones; hairs on mesoscutum rather scanty medially, not long; dorsal fringle of propodeal corbicula distinctly yellowish, well arranged; tibial scopa composed of short, pale hairs; 2nd to 4th terga each with a broad, dense, white band, that of 2nd broadly interrupted, and that of 3rd narrowed medially; caudal fimbria large, golden.

Structure: Clypeus strongly convex, tessellate with close punctures; clypeus with a longitudinal impunctate space; antennae with 3rd segment equal to 4th plus 5th; cheeks receding. Mesoscutum

slightly shiny medially, with irregular punctures a little stronger than in *opacifovea*; scutellum flat, densely punctate; propodeum shorter and broader than in *opacifovea*, coarsely sculptured enclosure large, well defined, distinctly wrinkled all over. Metasomal terga, including lst, densely punctured with punctures much more evident than in *opacifovea*.

Male. Body length 7−8 mm.

Pubescence: Head and thorax with long, dense, whitish hairs, those on clypeus abundant, white; head and thorax without mixed brownish or blackish hairs; leg with white hairs except for inner surface of tarsus slightly yellowish. Metasomal tergum 1 with more or less long and dense white hairs anteriorly, terga 2−4 with rather short, fine, pale hairs, with apical whitish hair bands poorly developed; tergum 5 with sparse, whitish hairs posteriorly; tergum 6 with sparse, whitish hairs; sterna l−5 with sparse, short, suberect, whitish hairs.

Structure: Process of labrum small, twice as broad as long, transverse with apical margin slightly emarginate medially; clypeus with apical half densely tessellate and basal half shagreened, with shallow, moderate-sized, close punctures; vertex broadly round in frontal view; scape slightly longer than flagellar segment 1 plus 2; flagellar segment 1 slightly longer than segment 2. Pronotum weakly tessellate with weak, sparse punctures; pronotum with lateral suture weakly indicated, moderately long; anterior margin of pronotum not emarginate medially; mesoscutum densely tessellate with indistinct, somewhat dense punctures posteriorly, nearly shagreened anteriorly; propodeal enclosure large, strongly wrinkled all over; dorsal face of propodeum and corbicular area shagreened with rough punctures. Metasomal terga very weakly, finely tessellate, weakly shiny, with dense, more or less large and strong punctures; apical depressions of terga not sharply indicated.

Remarks: This is similar to the European *A. susterai* Alfken. It differs from *susterai* by the clypeus weakly convex with a median longitudinal impunctate space transversely shagreened, the process of labrum not emarginate in the middle and the male clypeus with dense silvery white hairs (Tadauchi and Xu, 1995).

Specimens examined: [JELKU] KOREA: GN: 4♀, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, 1.v.1992, O. Tadauchi. JB: 2♀, San Lyong Li, San Nae Meon, Nam Weon Gun, 2.v.1992, O. Tadauchi. GG: 2♀1♂, Kang Nung, Pochongun, 23.iv.1992, O. Tadauchi. GW: 1♂, Gam Jong Li, Dong Meon, Chun Chon Gun, 25.iv.1992, O. Tadauchi; 3♀, Boug Myong Li, Dong San Meon, Chun Chon Gun, 26.iv.1992, O. Tadauchi; 2♀, Ogari, Seon Myon, Yang Yang Gun, 27.iv.1992, O. Tadauchi; 2♀, Pupan Meon, Hong Cheon Gun, 20.v.1992, O. Tadauchi. [Cheju Is.] 2♀, Kwangpyong-ri, Namjeju-gun, 23.iv.1997, O. Tadauchi; 7♀, Mt. Halla, 300−550 m, Haean-dong, 26.iv.1997, O. Tadauchi; 2♀, Mt. Halla, 300−550 m, Haean-dong, 26.iv.1997, J-c. Paik; JAPAN: Holotype ♀ (Kyushu Univ.): Sanjiro, Utsukushigahara, Nagano Pref., Japan, 7.v.1961 (Y. Hirashima). [KEIU] KOREA: 1♀, GG Hongreung, 21.iv.1961, JAE; 1♀, GG Cheonmasan, 30.iv.1972, JI Kim; 1♀, GG Geumgoksaneung, 14.iv.1983, MR Kim; 1♀, GG Ganghwa-do Manisan Jeongsusa, 30.iv.1995, HS Won; 1♀, GG Ganghwa-do Manisan Jeongsusa, 13.iv.1996, HS Won; 1♀, CN Seosan Gayasan, 2.v.1997, MR Kim; 2♀, CN Magoksa, 23.iv.1983, MR Kim; 1♀, CN Magoksa, 23.iv.1983, HC Park.

Floral records: Korea: *Brassica campestris*, *Sagina japonica*, *Rhododendron* sp., *Duchesnea chrysantha*.

Distribution: Korea (Central, Southern, Jeju); China (Heilongjiang Prov., Beijing); Japan (Hokkaido, Honshu, Sado Is., Shikoku, Kyushu, Tsushima Is.); Russia (Far East area).

Region: Eastern Palaearctic.

Korea: GG, GW, CN, JB, GN, JJ.

52. *Andrena* (*Simandrena*) *nippon* Tadauchi et Hirashima, 1983 (Pl. 17, Female: C; Male: D)

Il-bon-heo-ri-ae-kkot-beol

Andrena (*Simandrena*) *nippon* Tadauchi et Hirashima, 1983, (20): 89−92, Type: female, TL: Honshu, Japan; TD: JELKU.

Andrena (*Simandrena*) *nippon*: Tadauchi, 1989: 685; Tadauchi and Xu, 1995: 215; Gusenleitner & Schwarz, 2002: 531−532.

Andrena (*Simandrena*) *kerriae* Hirashima, 1965, J. Fat. Agr., Kyushu Univ., 13: 499, female, in part [description].

Description: Based on the description by Tadauchi and Hirashima (1983).

Female. Body length 8−9 mm.

Pubescence: Hairs on head not specially dense, pale to deep fulvous; facial fovea brownish (fulvous in *kerriae*). Hairs on mesoscutum pale to deep fulvous, not mixed with fuscous hairs, short, not dense; propodeal corbicula very well developed with dorsal fringe composed of very long, dense, well curled, yellowish hairs; dorsal face of propodeum with fulvous hairs, not dense; tibial scopa scanty, short. Metasomal tergum 1 free of hairs medially; terga 2−4 with whitish to yellowish, dense, compact hair bands, band of 2nd broadly interrupted, and that of 3rd narrowed medially; caudal fimbria brownish (golden in *kerriae*); metasomal sterna 1−2 with short, dense, erect hairs medially, sterna 2−5 with short, suberect, pale hairs posteriorly, with apical fringe very short.

Structure: Process of labrum more than three times as broad as long (twice as broad as long in *kerriae*), broadly round; clypeus well convex, without or with a longitudinal, shiny, impunctate median space (shagreened impunctate space in *kerriae*); clypeus smooth, shiny with large, strong, dense punctures (weakly shagreened with coarse, large, close punctures in *kerriae*); cheeks slightly broader than eye seen in profile; scape longer than flagellar segments 1−3, flagellar segment 1 nearly as long as segments 2 plus 3. Pronotum weakly tessellate, with weak, sparse punctures; mesoscutum weakly tessellate with strong, dense, medium-sized punctures (slightly sparser than in *kerriae*); propodeal enclosure rugose basally, densely tessellate apically, not wrinkled (distinctly wrinkled all over in *kerriae*). Metasomal tergum 1 smooth, shiny with punctures slightly sparser and weaker than in *kerriae*, terga 2−4 weakly tessellate with punctures slightly sparser than in *kerriae* on basal areas, with sparse, weak punctures on apical areas; apical depressions of terga moderately indicated; apical depressions of sterna well indicated.

Male. Body length 7−8 mm.

Pubescence: Hairs on head dense, pale, mixed with much brownish to blackish ones on paraocular area, vertex and cheeks; hairs on clypeus not abundant as in *kerriae*. Metasomal tergum 1 with more or less and dense, pale yellowish hairs anteriorly, terga 2−5 with rather short, blackish hairs, with apical hair bands whitish, poorly developed; tergum 5 with sparse, yellowish hairs apically; tergum 6 with sparse, yellowish hairs.

Structure: Process of labrum broader than *kerriae*, transverse with apical margin slightly emarginate; scape longer than flagellar segments 1 plus 2; flagellar segment 1 as long as segment 2, slightly shorter than segment 3. Mesoscutum weakly tessellate anteriorly and laterally, smooth and shiny medially with sparse, moderate sized, strong punctures. Metasomal terga smooth and shiny (weakly tessellate in *kerriae*) with more or less large and strong punctures, sparser than in *kerriae*.

Remarks: This species closely resembles *Andrena* (*Simandrena*) *kerriae* Hirashima. It is distinguished from *kerriae* by the process of labrum broader, the clypeus with median longitudinal area smooth and shiny, the propodeal enclosure rugose only basally, and the metasomal terga with weaker, smaller and sparser punctures. In addition, the female caudal fimbria darker (brownish) than in *kerriae* (golden), and the hairs on the male clypeus are sparser and darker (pale mixed with black) than *kerriae* (very dense and white).

Specimens examined: [JELKU]. JAPAN: Holotype female, Hatahoko, Mt. Norikura, Gifu Pref., 8.v.1976, O. Tadauchi. [KEIU] KOREA: 1♀, GG Cheonmasan, 30.iv.1972, JI Kim.

Floral records: *Brassica campestris* L.; *Capsella bursa-pastoris* Medicus; *Taraxacum albidum* Dahlst.

Distribution: Korea (Central, new record); China (Heilongjiang Prov., Beijing); Japan (central and northern Honshu); Russia (Far East area).

Region: Eastern Palaearctic.

Korea: GG.

53. *Andrena* (*Simandrena*) *opacifovea* Hirashima, 1952
(Pl. 17, Female: E; Male: F)
Heo-ri-ae-kkot-beol

Andrena (*Simandrena*) *opacifovea* Hirashima, 1952, Mushi, 24: 31−32, Type: male; TL: Kyushu, Japan; TD: JELKU; Hirashima, 1965, J. Fac. Agr., Kyushu Univ., 13: 497; Tadauchi and Xu, 1995, Esakia, (35): 211−213; Tadauchi et al., 2001, Esakia, (41): [in URL]; Gusenleitner & Schwarz, 2002, Entomofauna, (Suppl. 12): 553−554; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 146 [photos].

Andrena (*Simandrena*) *opacifovea opacifovea*: Tadauchi & Hirashima, 1983, Esakia, (20): 82; Tadauchi, 1989, A Check List of Jap. Insects, 685; Tadauchi & Lee, 1992, Esakia, (32): 51 [Korea].

Description: Based on the redescription by Hirashima (1965).

Female. Body length 9−11 mm.

Pubescence: Hairs on body short and scanty; hairs on head nearly pale or sometimes slightly yellowish except for sparse brownish hairs on frons and vertex; facial fovea brownish above and silvery below. Mesoscutum with short, sparse, pale ochraceous hairs and with much sparser, longer, erect ones above; hairs on thorax moderately long and dese, dull white without admixture of darker ones; dorsal fringe of propodeal corbicula yellowish, quite long, well arranged; tibial scopa scanty, composed of very short (on outer face) to slightly longer (on anterior margin) hairs. Metasoma scanty of hairs; posterior margins of 2nd to 4th terga with broad white hair bands, band of 2nd broadly, that of 3rd narrowly interrupted medially; caudal fimbria yellowish, slightly brownish medially.

Structure: Process of labrum broadly rounded at apex; clypeus well convex, finely tessellate, with irregular punctures; 3rd antennal segment indistinctly shorter than 4th plus 5th; cheeks slightly rounded above. Mesoscutum tessellate with more or less strong punctures; propodeum subtriangular, strongly tapering posteriorly, coarsely sculptured; enclosure of propodeum triangular, well defined, distinctly wrinkled nearly all over; legs with hind tibia not long, widened apically. Metasoma finely tessellate all over, therefore weakly shiny; 1st tergum with very weak punctures; 2nd and the following terga with similar punctures slightly denser.

Male. Body length 7–8 mm.

Pubescence: Head and thorax with long, more or less dense, dull hairs, those on clypeus white, on sides of face and frons blackish. Hairs on thorax above yellowish. Metasoma scanty of hairs; hairs on 1st tergum white, longer than those on the following terga; no distinct hair bands.

Structure: Process of labrum transverse with apical margin nearly entire; clypeus well convex medially, weakly tessellate, somewhat coarsely punctured; antennae elongate with 3rd segment about as broad as long, shorter than 4th which is approximately as long as 5th; cheeks about as broad as or slightly narrower than eyes seen in profile, much receding. Mesoscutum tessellate with somewhat roughened punctures; propodeal enclosure large, densely irregularly and strongly wrinkled all over. Metasomal terga finely tessellate, shiny with an indication of microscopical punctures; posterior depressions of terga not sharply indicated, impunctate.

Remarks: It is very similar to *Andrena yamato*, but is separable by the larger size, the submargin of the pronotum emarginate in the middle, the pronotum with a median longitudinal line, the vertex and mesoscutum with hairs paler. The flying season is later.

Specimens examined: [JELKU] KOREA: 1♀, Sim Won Valley, San Nae Meon, Nam Weon Gun, JN, 13.v.1991, T. Saigusa. JAPAN: Holotype male (Kyushu Univ.), Homanzan, Prov. Chikuzen (=Fukuoka Pref.), Japan, 19.iv.1931 (K. Yasumatsu). [KEIU] KOREA: 1♀, GG Suraksan, 29.v.1999, YC Park; 1♀, GG Bogwangsa, 17.vi.1977, SC Lee; 1♀, GG Cheonmasan, 4.v.1977, SH Yoo; 1♀, GG Cheonmasan, 28.v.1982, ML Kim; 1♀, GG Cheonmasan, 28.v.1982, TH Chie; 1♀, GG Aengmubong, 19.vi.1974, GG SA; 1♀, GG Aengmubong, 6.v.1973, GJ Yoon; 1♀, GG Wangbangsan, 23.v.1976, GH Lee; 1♀, GG Wangbangsan, 5.vi.1977, YH Kim; 1♀, GG Wangbangsan, 6.vi.1977, SG Yoon; 1♀, GG Gwangreung, 28.v.1972, SY Kim; 1♂, GW Pyeongchang Bongpyeong Huiryeongbong, 22.v.1998, JG Kim; 1♀, GW Chiaksan, 6.vi.1974, HY Kang; 1♀, GW Chiaksan Geumdae-ri, 8.vi.1974, YB Lee; 3♂, GW Gapyeong Myeongjisan Seungcheonsa, 5.v.2001, MR Kim; 2♂, CB Yeongwol Baekdeoksan Gwaneumsa, 12.v.2001, SM Lyu; 1♀, CB Wolaksan, 30.v.1987, JS Kim; 2♀, CN Gyeruongsan, 26.v.1974, GJ Moon; 1♂, CN Seosan Gayasan, 2.v.1997, JD Yeo; 1♀, CN Hongseong Balgyosan, 6.vi.1998, Park YG; 1♀, JN Piagol, 7.vii.1976, SH Nam.

Floral records: Unknown.

Distribution: Korea (Central, Southern); China (Heilongjiang Prov., Beijing); Japan (Hokkaido, Honshu, Sado Is., Shikoku, Kyushu, Tsushima Is., Tanegashima Is.); Russia (Far East area).

Region: Eastern Palaearctic.

Korea: GG, GW, CB, CN, JN.

54. *Andrena* (*Simandrena*) *yamato* Tadauchi et Hirashima, 1983 (Pl. 18, Female: A; Male: B)

Dung-geun-heo-ri-ae-kkot-beol

Andrena (*Simandrena*) *yamato* Tadauchi et Hirashima, 1983, (20): 83–86. Type: female TL: Kyushu, Japan; TD: JELKU.

Andrena (*Simandrena*) *yamato*: Tadauchi & Lee, 1992: 50; Tadauchi & Xu, 1995: 210; Kim, 1996: 214; Tadauchi et al., 1997: 200 (in list); Gusenleitner & Schwarz, 2002: 837–838; Lee & Paik, 2003: 134; Paek et al., 2010: 213.

Andrena (*Simandrena*) *opacifovea koreana* Kim & Kim, 1989, Korean J. Ent., 19: 202 (first Korean record); ESK & KSAE, 1994: 266; Kim, 1996: 214. Synonymyzed by Tadauchi & Lee (1992).
Andrena (*Simandrena*) *opacifovea*: Hirashima, 1952, Mushi, 24: 31, in part [description].

Description: Based on the description by Tadauchi and Hirashima (1983).

Female. Body length 8–9 mm.

Pubescence: Hairs on head nearly pale or sometimes slightly yellowish; facial fovea brownish above and silvery below. Mesoscutum with short, pale hairs and mixed with much sparser, longer, erect, brownish ones; hairs on scutellum long, brownish marginally; propodeal corbicula very well developed with dorsal fringe of yellowish, quite long, dense, well arranged hairs; dorsal face of propodeum with sparse yellowish hairs; tibial scopa scanty, composed of very short hairs. Metasomal tergum 1 free of hairs medially; posterior margins of terga 2–4 with broad white hair bands, that of 2nd broadly, that of 3rd narrowly interrupted medially; caudal fimbria pale brownish; metasomal sterna 1–2 with short, dense, erect hairs medially, sterna 2–5 with short, suberect, pale hairs posteriorly, with apical fringe very short.

Structure: Process of labrum twice as broad as long, entire; clypeus more convex than in *opacifovea*, nearly smooth or basal half weakly tessellate, more shiny than in *opacifovea*, with medium-sized, more or less distinct, not dense, irregular punctures; clypeus without a longitudinal impunctate space (with a longitudinal impunctate space in *opacifovea*); cheeks with very narrow shiny space near eye and shagreened posteriorly; scape longer than flagellar segments l–3; flagellum with segment 1 shorter than 2 plus 3. Pronotum very weakly tessellate, shiny, with weak, sparse punctures; pronotum with subapical margin not emarginated (emarginate in *opacifovea*) and pronotal line not indicated (well indicated in *opacifovea*); mesoscutum less tessellate than in *opacifovea* with smaller, weaker, and sparser punctures than in *opacifovea*; propodeal enclosure large, triangular, distinctly wrinkled all over (often weak in *opacifovea*), often transversely keeled at apex. Metasomal tergum 1 weakly tessellate with sparse, microscopical punctures; weaker than in *opacifovea*, terga 2–4 finely tessellate all over, weakly shiny with slightly larger punctures denser on basal areas; apical depressions of terga well indicated; posterior depressions of sterna not well indicated.

Male. Body length 8 mm.

Pubescence: Head and thorax with hairs long, more or less dense, white. Hairs on thorax not mixed with brownish. Metasomal terga 2–4 with indistinct whitish hair bands apically; tergum 6 with sparse, pale yellowish hairs.

Structure: Clypeus very weakly to weakly tessellate, with more or less dense, coarse punctures; scape equal to flagellar segments 1 plus 2; flagellum with segment 1 about as long as broad, distinctly shorter than next segments. Mesoscutum densely tessellate with small, sparse punctures posteriorly, nearly shagreened anteriorly; sternum 7 with apex emarginate, V-shaped, apical lobes narrow (broad and round in *opacifovea*), with sparse long hairs; sternum 8 with apical lobe slender (broad and apex widened in *opacifovea*), with abundant, long hairs.

Remarks: This species is one of the most abundant species in Japan and South Korea. It mainly visits *Brassica campestris* L. It is somewhat similar to European *A. dorsata* (Kirby) in having the tessellated metasomal terga. But the female of *A. yamato* is distinguished by the flagellar segment 1 shorter than 2 + 3 and the propodeal enclosure distinctly wrinkled all over. It is very close to *A. opacifovea* Hirashima, but can be separated by the smaller size, the pronotum with subapical margin not emarginate in the middle and without a median longitudinal line, the propodeal enclosure distinctly wrinked all over and the male genital capsule with dorsal lobes of gonocoxite not pro-

jected.

Specimens examined: [JELKU] KOREA: 4♂, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, GN, 9.v.1991, O. Tadauchi; 2♂, same locality as above, 9.v.1991, T. Saigusa; 1♂, Dal Gung, San Nae Meon, Nam Weon Gun, JB, 10.v.1991, O. Tadauchi; 1♂, Mt. Nogodan, San Nae Meon, Nam Weon Gun, JB, 10.v.1991, T. Saigusa; 6♂, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, GN, 11.v.1991, O. Tadauchi; 3♂, same locality and date as above, K. Morimoto; 2♂, same locality and date as above, T. Saigusa; 1♂, Mt.Nogodan, San Nae Meon, Nam Weon Gun, JB, 12.v.1991, T. Saigusa; 43♂, Sim Won Valley, San Nae Meon, Nam Weon Gun, JB, 13.v.1991, O. Tadauchi; 1♂, same locality and date as above, K. Morimoto; 1♂, same locality and date as above, T. Saigusa; 2♂, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, GN, 15.v.1991, O. Tadauchi; 7♂, same locality and date as above, T. Saigusa; GN: 2♂, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, 11.v.1991, O. Tadauchi; 8♂, 1.v.1992, O. Tadauchi. JN: Sim Won Valley, San Nae Meon, Nam Weon Gun: 1♂, 13.v.1991, O. Tadauchi; 1♀, 13.v.1991, T. Saigusa. GG: 10♂, Kang Nung, Pochon Gun, 24.iv.1992, O. Tadauchi. GW: 2♀ 4♂, Pupan Meon, Hong Cheon Gun, 20.v.1992, O. Tadauchi; 4♂, Gam Jong Li, Dong Meon, Chun Chon Gun, 21.v.1992, O. Tadauchi; Bong Myong Li, Dong San Meon, Chun Chon Gun: 14♀5♂, 22.v.1992, O. Tadauchi; 3♀, 23.v.1992, O. Tadauchi. JAPAN: Holotype female (Kyushu Univ., no. 2422): Kuroubaru, Chikuho-machi, Fukuoka Pref., Japan, 7.iv.1975, O. Tadauchi. [KEIU] KOREA: 2♀, GG Bogwangsa, 19.iv.1977, YS Kim; 3♀, GG Bogwangsa, 19.iv.1977, SH Lee; 1♀, GG Aengmubong, 10.vi.1977, EG Lee; 2♀, GG Bogwangsa, 17.vi.1977, SJ Jeong; 2♀, GG Bogwangsa, 17.vi.1977, SC Lee; 1♂, GG Bogwangsa, 17.vi.1977, SH Nam; 1♀, GG Aengmubong, 14.vi.1975, JH Yoon; 2♀, GG Pocheon Wangbangsan, 5.vi.1977, SS Park; 2♀, GG Pocheon Wangbangsan, 5.vi.1977, GU Lee; 1♀, GG Pocheon Wangbangsan, 5.vi.1977, YS Kim; 1♀, GG Pocheon Wangbangsan, 16.v.1982, GS Nam; 1♀, GG Yongmunsa, 18.v.1973, SH Park; 1♀, GG Cheonmasan, 25.v.1982, HD Yun; 1♀, GG Cheonmasan, 29.v.1982, ML Kim; 1♀, GG Cheonmasan, 285.v.1982, SS Park; 1♀, GG Cheonggyesan, 5.vi.1974, YM An; 1♀, GG Cheonmasan, 17.iv.1977, JH Kim; 2♀, GG Cheonmasan, 22.v.1977, SH Yoo; 1♀, GG Soyosan, 6.vi.1974, DH Yang; 1♀, GG Namhansanseong, 19.vi.1974, DJ Sim; 1♀, GG Paju Goryeongsan, 29.v.1999, JJ Kim; 4♂, GG Gapyeong Myeongjisan Seungcheonsa, 5.v.2001. MR Kim; 2♀, GW Choaksan Guryongsa, 8.vi.1974, HY Kang; 1♂, CB Yeongwol Sujumyeon Backdeoksan Gwaneumsa, 12.v.2001, SM Lyu; 1♀, CB Cheongju Guksabong, 17.v.1997, MR Kim; 1♀, CB Sobaeksan Huibangsa, 7.vi.1974, CH Sin; 1♀, CN Gyeruongsan Gapsa, 26.v.1974, OJ Lee; 1♀, CN Gyeruongsan Gapsa, 26.v.1974, TH Jeong; 1♀, CN Gyeruongsan Gapsa, 26.v.1974, HY Kang; 1♀, CN Gyeruongsan Gapsa, 26.v.1974, DH Yang; 1♀, CN Boryeong Cheongjamyeon Janghyeon-ri Oseosan, 9.v.1999, MR Kim; 1♂, JN Suncheon Jogyesan, 21.v.1988, CS Song; 5♀, JJ Muljangil, 7.v.1983. MR Kim. [SNUE] KOREA: 8♀, GG Suwondaesumokwon, 12.v.1995, HR Lee; 1♀, GG Seoulnongdae, 26.v.1995, DR Seo; 1♀, GG Gwanggyo, 22.vi.1992, SJ Park; 1♀, GG Myeongjisan, 20.vi.1992, JIB; 1♀, GG Sangrokgyojeong, 26.v.1995, SK Son. [QIAL] KOREA: 1♀, GN Milyang Pyochungsa, 26.iv.2003, HS Lee; 2♀, GW Yangyanggun Seomyeon Hwangiri, 29.iv.2007, HS Lee; 2♀, CN Dangjisi Godaemyeon Daechonmyeon Gosanmyeon, HS Lee; 1♀, GB Yangyanggun Seokbomyeon Yowon1ri, 8.viii.2008, HS Lee.

Floral records: Japan: 36 flowering plants were recorded from Japan. Most specimens were collected on *Brassica campestris*.

Distribution: Korea (Central, Southern); Japan (Hokkaido, Honshu, Shikoku, Kyushu, Sado Is., Tsushima Is., Yakushima Is.).

Region: Eastern Palaearctic.

Korea: GG, GW, CN, GB, GN, JB, JN.

Subgenus *Stenomelissa* Hirashima et LaBerge, 1965

Stenomelissa Hirashima et LaBerge, 1965: 500. TS: *Andrena halictoides* Smith, 1869, by original designation.

55. *Andrena* (*Stenomelissa*) *halictoides* Smith, 1869 (Pl. 18, Female: C; Male: D)
Gin-eol-gul-ae-kkot-beol

Andrena halictoides Smith, 1869, 4: 205, Type: female; TL: Japan; TD: BMNH.
Andrena (*Stenomelissa*) *halictoides*: Hirashima, 1965: 13: 502; Kim & Kim, 1983a: 6 [first Korean record]; Tadauchi & Hirashima, 1988: 33: 70−72; Tadauchi & Lee, 1992: 55; ESK & KSAE, 1994: 266; Kim, 1996: 215; Tadauchi et al., 1997: 200 (in list); Gusenleitner & Schwarz, 2002: 332−333; Lee & Paik, 2003: 135; Xu and Tadauchi, 2008: 65; Paek et al., 2010: 213; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 148 [photos].

Description: Based on the redescription by Hirashima (1965).

Female. Body length 10−12 mm.

Pubescence: Hairs on head and thorax short to more or less long, not specially dense, those on abdomen scanty. Hairs on head nearly uniformly dull white except for those on vertex and frons laterally slightly brownish; facial fovea brown. Hairs on mesoscutum, scutellum and metanotum uniform in colour, rather variable, primarily pale yellowish brown, sometimes more paler or more brownish; hairs on mesoscutum short; propodeal corbicula not well developed, with dorsal fringe of loose hairs; tibial scopa sooty brown or nearly fuscous, becoming whitish anteriorly, with hairs on anterior margin nearly silver white; tibial scopa quite well developed, composed of long, dense, well branched hairs. Metasoma scanty of hairs; cilia on 2nd to 4th terga pale or very slightly brownish; posterior margins of 2nd and 3rd terga with indistinct lateral fringes of sparse, whitish hairs; similar and sparser hairs present on posterior margin of 4th tergum; caudal fimbria glistening yellowish brown.

Structure: Head considerably elongate, longer than broad seen in front; mandibles long, well decussate, moderately robust; malar space elongate, a little shorter than or about equal to basal width of mandibles, nearly smooth and strongly shiny; process of labrum very large, semicircular; clypeus protuberant, much exceeding line running bases of eyes; clypeus smooth or nearly so, broadly impunctate or very sparsely punctate medially, weakly punctate laterally; antennae long, with 3rd segment a little longer than 4th plus 5th; 4th indistinctly broader than long, 5th about as long as wide; facial fovea long, deep; cheeks about as broad as eyes seen in profile, rounded above, receding below, nearly smooth and quite feebly punctate near eyes, feebly rugulose posteriorly and beneath. Mesoscutum tessellate, distinctly so anteriorly, weakly and not densely punctate, weakly shiny; dorsal face of propodeum densely tessellate, not roughened, weakly to rather well shiny; enclosure more finely tessellate than outside, narrowly rugulose basally. Metasomal terga shiny; 1st tergum smooth and nearly impunctate; 2nd and the following terga nearly smooth or feebly tessellate, sparsely to moderately densely, very weakly punctate; posterior depressions of 2nd to 4th terga broad, more or less distinctly marked.

Male. Body length 8.5 mm.

Pubescence: Hairs on head and thorax long, sparse, those on metasomal terga short, sparse; hairs on full body nearly uniform in color, nearly dull yellowish gray, without admixture of brown hairs except for cilia on apical metasomal terga occasionally slightly brownish; metasomal terga without hair fringes on posterior margins.

Structure: Head greatly variable in size; mandibles long, robust, simple with sharp apices; malar space about equal to or slighty shorter than basal width of mandible, smooth and shiny; process of labrum large, transverse, nearly flat or slightly convex, with apical margin entire; clypeus protuberant, much produced, nearly smooth, sparsely and weakly punctate; antennae elongate with 3rd segment about twice as long as broad, 4th nearly quadrate, 5th about one and one-half time as long as broad and subequal to each following segment in length, ultimate segment uncinate; facial fovea deeply impressed with inner edge not distinct; cheeks variable, usually broader than eyes seen in profile, receding to considerably well developed. Mesoscutum tessellate, nearly smooth and shiny posteriorly, weakly and sparsely punctate; propodeum densely tessellate, nearly roughened; enclosure more finely tessellate than dorsal face of propodeum, rather shiny, narrowly nearly rugulose basally; apices of tibiae each with an outwardly projecting spine, middle one of which is longest. Metasomal terga shiny, nearly smooth, with very fine, moderately close punctures; 6th sternum deeply triangulary emarginate; ultimate sternum largely exposed throughout that emargination.

Remarks: This species is characterized by having the malar space relatively shorter, about $^3/_5$ times in the female and slightly more than $^1/_2$ times in the male as long as the basal width of the mandible, the clypeus less convex and less protuberant, the ratio of the distance between the lower bases of the eyes to the length of the clypeus about 0.45, the maxillary palpi shorter, and the lower paraocular area of the male with yellow markings (Tadauchi and Hirashima, 1988).

Specimens examined: [JELKU] KOREA: 1♂, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, GN, 9.v.1991, O. Tadauchi; 3♀3♂, same locality and date as above, T. Saigusa; 4♂, Kyong Yeo Meon (ah. 1300 m), Gurye Gun, JN, 10.v.1991, O. Tadauchi; 1♀2♂, San Lyong Li, San Nae Meon, Nam Weon Gun, JB, 10.v.1991, O. Tadauchi; 4♀2♂, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, GN, 10.v.1991, O. Tadauchi; 11♀11♂, same locality as above, 11.v.1991, O. Tadauchi; 1♀13♂, same locality and date as above, K. Morimoto; 7♂, same locality and date as above, T. Saigusa; 1♀, San Lyong Li, San Nae Meon, Nam Weon Gun, JB, 12.v.1991, O. Tadauchi; 2♀, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, GN, 12.v.1991, T. Saigusa; 8♀6♂, Sim Won Valley, San Nae Meon, Nam Weon Gun, JB, 13.v.1991, O. Tadauchi; 1♀, same locality and date as above, K. Morimoto; 1♂, Mt. Nogodan, San Nae Meon, Nam Weon Gun, JB, 13.v.1991, T. Saigusa; 3♀, Jeong Lyong Chy, San Nae Meon, Nam Weon Gun, JB, 14.v.1991, T. Saigusa; 3♂, same locality and date as above, T. Saigusa; 57♀56♂, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, GN, 15.v.1991, O. Tadauchi; 1♀1♂, same locality and date as above, K. Morimoto; 4♀14♂, same locality and date as above, T. Saigusa. [KEIU] KOREA: 1♀, GG Goryeongsan, 21.vi.1997, JY Son; 1♀, GG Bogwangsa, 13.v.1998, TG Jeong; 1♂, GG Aengmubong, 9.v.1976, JH Nam; 1♀, GG Gwangreung, 14.v.1972, GC No; 1♀, GG Gwangreung, 14.v.1974, GJ Mun; 1♀, GG Gwangreung, 14.v.1974, TH Jeong; 1♂, GG Chukryeongsan, 1.v.1999, JE Kim; 1♀, GG Chukryeongsan, 1.v.1999, IG Min; 1♀, GG Chukryeongsan, 17.v.1999, JH Kim; 1♀, GG Chukryeongsan, 17.v.1999, HJ Park; 1♀, GG Chukryeongsan, 17.v.1999, JJ Kim; 1♂, GG Cheonmasan, 23.iv.1961, EB Yoo; 1♂, GG Soyosan, 6.vi.1982, SA Bae; 1♀, GG Cheonmasan, ?.v.1961, ??; 1♂, GG Cheonmasan, 30.iv.1972, SN Choi; 1♀, GG Cheonggyesan, 16.v.1986, JE Lee; 1♀, GG Namhansanseong, 25.v.1988, BU Min; 1♂, GG Namhansanseong, 9.v.1987, JC Kim; 3♀, GG Pocheon Gangssibong, 2.v.1997, MR Kim; 1♀, GG Pocheon Gangssibong,

2.v.1997, JD Yeo; 1♀, GG Pocheon Backnsan, 10.v.1997, YS Jeong; 1♂, GG Pocheon Wangbangsan, 16.v.1982, KY Chang; 1♀, GW Gapyeong Myeongjisan Seungcheonsa, 5.v.2001, MR Kim; 1♀1♂, GW Yanggu Daeamsa, 13.vi.1990, JI Kim; 1♀, GW Daeamsan, 13.vi.1990, JI Kim; 1♀, GW Hongcheon Balgyosan Eoroari, 23.v.1998, JD Yeo; 1♀, GW Gangchon, 22.v.1977, ES Oh; 1♀, GW Wonju Chiaksan, 5.vi.1992, DU Sin; 1♀, GW Inje Gachilbong, 31.v.1997, JD Yeo; 1♀1♂, GW Cheolwon Galmal Sincheolwon-ri Myeongseongsan, 16.v.1999, MR Kim; 2♀, Pyeongchang Hoeryeongbong, 22.v.1998, JG Kim; 1♀, GW Hyangrobong, 27.v.1968, JI Kim; 1♂, GW Gyebangsan , 5.vi.1983, MR Kim; 4♀5♂, CB Yeongwon Suju Baekdeoksan Gwaneumsa, 12.v.2001, SM Lyu; 1♀, CB Wolaksan, 31.v.1987, SI Han; 1♂, CN Boryeong Cheongjamyeon Janghyeon-ri Oseosan, 9.v.1999, MR Kim; 4♀1♂, GB Sobaeksan Birosa, 5.v.1999, SM Lyu; 1♂, JB Muju Gucheon-dong, 20.v.1983, YS Lee; 1♂, JB Muju Gucheon-dong, 21.v.1983, YM Jo; 1♂, JB Deokyusan, 27.v.1983, DE Lee.

Floral records: Japan: 26 flowering plants were recorded from Japan. Most specimens were collected on *Weigela hortensis* (Tadauchi and Hirashima, 1988).

Distribution: Korea (Central, Southern); Japan (Hokkaido, Honshu, Sado Is.); Russia (Far East area); China (Heilongjiang Prov.).

Region: Eastern Palaearctic.

Korea: GG, GW, CB, CN, JB, GN.

Subgenus *Taeniandrena* Hedicke, 1933

Taeniandrena Hedicke, 1933: 219. TS: *Melitta ovatula* Kirby, 1802, by original designation.

56. *Andrena* (*Taeniandrena*) *ezoensis* Hirashima, 1965
(Pl. 18, Female: E; Male: F)
E-jo-ae-kkot-beol

Andrena (*Taeniandrena*) *ezoensis* Hirashima, 1965, 13: 506−509, Type: male, TL: Hokkaido, Japan; TD: JELKU [female & male].

Andrena (*Taeniandrena*) *ezoensis*: Kim et Kim, 1983b: 71−72 [first Korean record]; Tadauchi & Lee, 1992: 54; ESK & KSAE, 1994: 266; Kim, 1996: 215 Tadauchi et al., 1997: 200 [in list]; Gusenleitner & Schwarz, 2002: 259; Tadauchi and Xu, 2003: 73−74; Lee & Paik, 2003: 135; Paek et al., 2010: 213.

Description: Based on the description by Hirashima (1965).

Female. Body length 9.5−11 mm.

Pubescence: Hairs on head short, fine, primarily white, slightly yellowish on frons and vertex; facial fovea slightly brownish above, not conspicuous. Hairs on thorax short, not specially dense, dull and pale yellowish brown on mesoscutum, scutellum and metanotum, pale or whitish on the rest of thorax; dorsal fringe of propodeal corbicula not well developed, composed of short, scanty, whitish hairs; tibial scopa compact, composed of moderately long, dense, slightly coarse, simple hairs; tibial scopa silver white, or sometimes yellowish posteriorly, occasionally narrowly brownish above basally. Metasoma scanty of hairs with discs of 1st and 2nd terga bare; cilia on 3rd and 4th

terga brownish; caudal fimbria brownish medially; posterior margin of 2nd tergum with lateral, those of 3rd and 4th terga with complete bands of short, appressed, snow-white hairs; band of 3rd tergum narrowed or rarely interrupted medially; similar hair fringe presents on posterior margin of 1st tergum laterally.

Structure: Process of labrum short, subtriangular, rugose, emarginate or bispinose apically; clypeus broadly flat, tessellate, dull, coarsely rugoso-punctate with an indication of median, longitudinal, raised, impunctate space; facial fovea more or less long and broad, not sharply indicated; antennae with 3rd segment shorter than 4th plus 5th; penultimate segment of antennae longer than broad; cheeks slightly narrower than eyes seen in profile, much receding, rounded posteriorly. Mesoscutum tessellate, dull, densely punctate with punctures much weaker than those on clypeus; scutellum shiny anteriorly, irregularly punctate; propodeal enclosure poorly rugose basally, granulate apically. Metasoma oval; 1st tergum much broader than long, densely tessellate, with an indication of sparse, very weak punctures; 2nd and the following terga densely tessellate, densely punctate with punctures; posterior depressions of 2nd and the following terga narrow, weakly indicated medially.

Male. Body length 8–9 mm.

Pubescence: Hairs on head somewhat long, more or less dense, primarily white or slightly yellowish on frons and vertex; hairs on clypeus becoming shorter toward apex. Hairs on thorax more or less long and dense but not obscure integument, slightly yellowish brown above, whitish below; head and thorax without admixture of brownish hairs. Metasoma covered with short fine hairs, those on 1st and 2nd metasomal terga white, and those on 3rd to 5th terga brownish; posterior margin of 2nd tergum with lateral, those of 3rd to 5th terga each with a complete band of short, more or less loose, white hairs; similar hairs present on posterior margin of 1st tergum laterally; posterior margins of 2nd to 5th metasomal sterna each with a complete fring of curled, silvery hairs.

Structure: Process of labrum short, nearly bispinose apically; clypeus more or less broadly nearly flat, strongly and densely rugoso-punctate, with or without an indication of median, longitudinal, impunctate space; antennae elongate with 3rd segment slightly longer than broad, slightly shorter than 4th which is about one and one-half times as long as broad and subequal to the following segments in length; 5th and the following segments convex in front; cheeks about as broad as or a little narrower than eyes in lateral view, much receding. Mesoscutum densely tessellate, densely punctate with punctures slightly roughened anteriorly, more or less shallow; propodeum coarsely sculptured, enclosure coarsely sculptured, or rugose basally, nearly granulate apically. Metasoma oblong, slightly shiny; 1st tergum tessellate with an indication of weak and sparse punctures; 2nd and the following terga tessellate, more densely and distinctly punctate; posterior depressions of terga narrow, very poorly indicated.

Remarks: The female of this species is recognized by the legs black, the clypeus with elongate punctures, the facial fovea light brown, the mesoscutum densely tessellate all over and the caudal fimbria blackish. The male of this species is recognized by the legs black, the FL1 is shorter than FL2 which is about as long as FL3, the metasomal terga weakly tessellate and shiny with distinct punctures. (Tadauchi and Xu, 2003).

Specimens examined: [JELKU] KOREA: 3♀2♂, Yonsil, Mt. Hallasan, Cheju Is., 24.vii.1990, O. Tadauchi; 3♀, same locality as above, 25.vii.1990, O. Tadauchi. Holotype male and allotype female (Kyushu Univ.), Ikeda, Tokachi, Hokkaido, Japan, 14–16.vii.1953 (Y. Hirashima). [KEIU] KOREA: 1♀, GG Gwaneumsan, 3.vi.1999, GJ Park; 1♀, GG Seosamneung, 24.vi.1973, DJ Sim; 1♀, GG Cheonggyesan, 15.vi.1977, SJ Jeong; 1♀1♂, GG Suraksan, 11.vi.1983, Namgungeungyeong; 2♀

1♂, GG Suraksan, 11.vi.1983, GG Yui; 1♀, GG Suraksan, 11.vi.1983, KST; 2♀, GG Gwangdeoksan, 5.vi.1982, ML Kim; 1♂, GG Bogwangsa, 6.vi.1973, GG Park; 1♂, GG Bogwangsa, 16.vi.1978, JG Lim; 1♀, GG Aengmubong, 6.vi.1973, JJ Kim; 1♂, GG Aengmubong, 18.vi.1977, SU Yeo; 1♀, GG Aengmubong, 16.vi.1974, OJ Lee; 1♀, GG Aengmubong, 16.vi.1974, GS Son; 1♀, GG Aengmubong, 16.vi.1974, SH Gu; 3♀1♂, GG Pocheon Gangssibong, 28.viii.1997, MR Kim; 2♀, GG Pocheon Gangssibong, 28.viii.1997, JD Yeo; 1♀, GG Sudongmyeon Chukryeongsan, 24.viii.1997, MR Kim; 1♀, GG Chukryeongsan, 4.viii.1999, MR Kim; 1♀, GW Baekrokdam, 1.viii.1974, JI Kim; 1♀, GW Sokcho-si, Seouldaesuryeonwon, 20.vi.1993, BG Kim; 2♂, GW Yanggu Haesanbun-ri, 13.vi.1990, JI Kim; 1♂, GW YangYang Naksansa, 6.vi.1974, GJ Mun; 1♂, GW Hwacheon Hwaaksan, 14.v.1998, SM Ryu; 1♀, GW Hwacheon Sannammyeon, 6.ix.1998, JD Yeo; 1♀, GW Chiaksan, 2.viii.1982, YK Koh; 1♀, GW Gangchon, 23.vi.1974, JH Kwon; 1♀, CB Jincheon Manroesan Yeongok-ri, 16.vi.1998, JK Kim; 1♀, CN Gongju Gyeryongsan Gapsa, 6.vi.1997, EY Lee; 1♀, CN Gyeruongsan, 26.v.1974, HR Lee; 1♀, GB Hwanghaksan, 4.vi.1978, YG Kang; 1♀, GB Hwanghaksan, 4.vi.1978, SH Lee; 1♀, GN Gayasan, 6.viii.1982, MK Kim; 1♀, GN Gayasan, 6.viii.1982, SH Bang; 1♀, JB Baekyangsa, 29.v.1983, YJ Bae; 2♀, JB Wanju Bongsilsan, 9.v.1997, MR Kim; 1♀, JN Duryunsan, 23.vi.1993, JeJ; 2♀1♂, JN Duryunsan, 23.vi.1993, BJE; 3♀, JN Duryunsan, 23.vi.1993, ASH; 1♀1♂, JN Duryunsan, 23.vi.1993, KSH; 2♀, JN Duryunsan, 23.vi.1993, AHT; 1♂, JN Duryunsan, 23.vi.1993, PKY; 1♂, JN Jirisan Ssanggyesa, 5.vi.1977, GA Kim; 1♀, JN Jirisan Ssanggyesa, 4.vi.1977, SJ Oh.

Floral records: Japan: *Trifolium repens*, *Dasyphora fruticosa*; China: *Vicia unijuga*, *Lespedeza bicolor*.

Distribution: Korea (Central, Southern, Jeju); Japan (Hokkaido, Honshu, Sado Is.); China (Beijing, Hebei, Jilin Provs.); Russia (Far East area).

Region: Eastern Palaearctic.

Korea: GG, GW, CB, CN, GB, JB, JN, JJ.

Subgenus *Trachandrena* Robertson, 1902

Trachandrena Robertson, 1902: 187–189. TS: *Andrena rugosa* Robertson, 1891, by original designation.

57. *Andrena* (*Trachandrena*) *foveopunctata* Alfken, 1932
(Pl. 19, Female: A; Male: B)
Dal-meun-ju-reum-heo-ri-ae-kkot-beol

Andrena foveopunctata Alfken, 1932, 3: 119, Type: female, TL: Japan, TD: ZMHB.

Andrena foveopunctata: Yasumatsu, 1941: 276.

Andrena (*Trachandrena*) *foveopunctata* Hedicke, 193: 220; Hirashima, 1952: 38 [female and male]; Hirashima, 1965: 510–513 [female & male, redescription, Japan]; Hirashima, 1966: 96, 117 [female & male, in key]; Kim et Kim, 1983: 7 [Korea]; Tadauchi, 1989: 685.

Description: Based on the redescription by Hirashima (1965).

Female. Body length 8 mm.

Pubescence: Hairs on head and thorax short and scanty, those on metasoma especially scanty. Hairs on head uniformly white; facial fovea very slightly brownish above, whitish below. Hairs on thorax above very pale yellowish brown to pale, those on thorax below whitish; propodeum with dorsal fringe of scanty, more or less long, branched hairs; tibial scopa large, compact, composed of well arranged, somewhat coarse hairs; tibial scopa silver white, narrowly brown above basally. Hairs on metasoma primarily confined to periphery; posterior margins of 2nd to 4th terga with fringe-like, very sparse, snow white hairs laterally; caudal fimbria bright, brownish, covered with long shiny white hairs.

Structure: Process of labrum small, nearly entire or slightly notched at tip; clypeus well convex, shiny, strongly and coarsely rugoso-punctate with punctures becoming coarser and sparser toward apex; facial fovea deep, broadly separated from eye margin by a shiny space, constricted at middle; antennae with 3rd segment a little more than one and one-half times as long as broad, slightly shorter than next two segments together. Masoscutum foveolate-punctate, with punctures irregular in distribution, interspaces linear to several puncture widths apart, weakly tessellate; propodeal enclosure defined by a carina posteriorly, interior of enclosure somewhat longitudinally carinate. Metasomal terga nearly smooth and shiny; 1st tergum scattered with weak punctures; 2nd to 4th terga transversely elevated basally, narrowly so medially and broadly so sublaterally; or in other expression, posterior depressions of 2nd to 4th terga well indicated, quite broad, narrowed sublaterally, nearly smooth and impunctate; basal. elevations of terga densely punctate.

Male. Body length 8 mm.

Pubescence: Hairs on clypeus long, dense, downy, white; hairs on the rest of head slightly yellowish in fresh specimens. Hairs on thorax somewhat abundant, very pale yellowish brown above, whitish below, not mixed with brown hairs. Hairs on metasomal terga short, sparse, nearly white, those on apical terga slightly yellowish; apical margins of 2nd to 5th metasomal sterna with fringe like, soft, branched, white hairs.

Structure: Mandibles long, slender, falciform, with sharp apices; process of labrum transverse, slightly convex; clypeus only slightly convex, densely rugoso-punctate; antennae somewhat long, with 3rd segment indistinctly longer than broad, slightly shorter than 4th which is indistinctly shorter than 5th; vertex coarsely rugoso-punctate; cheeks much broader than eyes, its outline elongate and slightly convergent posteriorly seen from above, somewhat coarsely rugoso-punctate all over. Mesoscutum strongly and densely rugoso-punctate; propodeum strongly and coarsely wrinkled or coarsely sculptured; enclosure longitudinally carinate, bounded posteriorly. Metasomal terga smooth and shiny; 1st tergum scattered with microscopical punctures; 2nd and the following terga weakly and sparsely, occasionally somewhat densely punctate; posterior depressions of 2nd to 5th terga well indicated, about one-half as broad as tergum respectively, nearly impunctate; metasomal sterna much more evidently punctate than in terga, with punctures relatively sparser than in female.

Remarks: This is a rather small and robust species. It is recognized by the foveolate-punctate mesoscutum. The metasoma of the female is also characteristic, the posterior depressions of the second to fourth terga are considerably broad, nearly smooth and impunctate (Hirashima, 1965).

Specimens examined: Not available from Korea.

Floral records: Japan: *Brassica campestris*; *Euonymus alata* var. *subtrifloris*.

Distribution: Korea (Jeju); Japan (Honshu, Kyushu).

Region: Eastern Palaearctic.

Korea: JJ.

58. *Andrena* (*Trachandrena*) *haemorrhoa japonibia* Hirashima, 1957
(Pl. 19, Female: E; Male: F)
Ju-reum-heo-ri-ae-kkot-beol

Andrena (*Trachandrena*) *haemorrhoa japonibia* Hirashima, 1957, 30: 53, Type: male, TL: Kyushu, Japan; TD: JELKU.

Andrena (*Trachandrena*) *haemorrhoa japonibia*: Kim et Kim, 1983b: 72 (first Korean record); Tadauchi et Lee, 1992: 56; Kim, 1996: 215; ESK & KSAE, 1994: 266; Tadauchi et al., 1997: 197−198; Gusenleitner & Schwarz, 2002: 259; Lee & Paik, 2003: 135; Paek et al., 2010: 213; Tadauchi, 2014, *In* Ill. Guide to Japanese Bees, 152 [photos].

Andrena (*Trachandrena*) *foveopunctata*: Kim & Kim, 1983a: 7; Tadauchi et al., 1997: 200 (in list). (nec Alfken, misidentidifcation).

Description: Based on the redescription by Hirashima (1965).

Female. Body length 8 mm.

Pubescence: Hairs on head and thorax short, more or less dense, those on metasoma scanty. Hairs on head white, very slightly yellowish on vertex; facial fovea whitish. Hairs on mesoscutum and scutellum fulvous; dorsal fringe of propodeal corbicula pale, long, more or less well arranged; tibial scopa not specially large, compact, silvery or faintly yellowish. Metasomal terga only hairly laterally; caudal fimbria golden.

Structure: Process of labrum with apical margin entire; clypeus well convex, shiny, strongly and densely rugoso-punctate, with a median, longitudinal, raised, impunctate line; facial fovea separated from eye margin by a shiny space; vertex densely rugoso-punctate with punctures; cheeks about as broad as or slightly broader than eyes seen in profile, not much receding, nearly rugoso-punctate. Mesoscutum strongly and coarsely rugoso-punctate, strongly roughened anteriorly; propodeum outside enclosure coarsely sculptured with dense rugae; enclosure carinate posteriorly, interior of enclosure principally longitudinally wrinkled. Metasoma shiny with punctures; 1st tergum somewhat densely punctate, with posterior portion longitudinally rugulose; 2nd to 4th terga with basal portion densely punctate, especially so laterally, posterior depressions well indicated, broad, weakly punctate and frequently longitudinally rugulose; intermediate sterna of metasoma densely rugoso-punctate.

Male. Body length 9 mm.

Pubescence: Hairs on full body (including legs) nearly concolorous, yellowish, without admixture of brownish hairs on any portion. Hairs on head and thorax long and abundant. Those on metasoma short and sparser; hairs on clypeus downy; hairs on posterior margins of 2nd to 4th metasomal terga forming an indistinct lateral fringe on each tergum; posterior margins of 2nd to 5th metasomal sterna each with an obscure fringe of suberect branched hairs.

Structure: Process of labrum transverse, reflected at tip; clypeus well convex, shiny, strongly and coarsely rugoso-punctate; antennae elongate with 3rd segment indistinctly longer than broad, much shorter than 4th which is about one-half times as long as broad and about as long as next segment; 4th to 12th segments of antennae slightly convex anteriorly; vertex coarsely rugoso-punctate, nearly roughened, at least with an indication of punctures; cheeks slightly narrower than large eyes seen in profile, receding, rugoso-punctate. Mesoscutum and scutellum quite densely and coarsely rugoso-punctate or roughened; propodeum strongly roughened; enclosure at least weakly carinate posteriorly, interior primarily longitudinally wrinkled. Metasomal terga smooth

and shiny; 1st tergum and basal portions of the following terga more or less densely, somewhat evidently punctate, with punctures becoming denser and stronger laterally; posterior depressions of intermediate terga broad, rather well indicated, much more weakly punctate than the rest of each tergum; intermediate sterna coarsely punctate with punctures shallow.

Remarks: It is easily distinguishable by the hind tibiae and tarsi and mid tarsi ferruginous. The nominate form is widespread in palaearctic region, and the present subspecies is restricted in Japan and Korea.

Specimens examined: [JELKU] KOREA: 1♂, Mt. Nogodan, San Nae Meon, Nam Weon Gun, JB, 12.v.1991, T. Saigusa; 2♀, Sim Won Valley, San Nae Meon, Nam Weon Gun, JB, 13.v.1991, O. Tadauchi. [KEIU] KOREA: 1♀, GG Ui-dong, 20.iv.1960, Jae; 1♀, GG Ui-dong, 15.iv.1961, Jae; 1♂, GG Dobongsan, 12.vii.1983, JH Kim; 1♀, GG Jeongreung Seogwangsa, 16.iv.1994, NR Kim; 1♀, GG Gwangreung, 30.iv.19610, JS Lee; 1♂, GG Namhansanseong, 15.iv.1979, DJ An; 4♂, GG Aengmubong, 17.iv.1983, JW Lee; 1♀, GG Aengmubong, 14.v.1983, JU Lee; 1♀, GG Aengmubong, 15.v.1983, TY Mun; 1♂, GG Aengmubong, 14.iv.1974, IH Lee; 1♂, GG Aengmubong, 14.iv.1974, YB An; 1♀, GG Aengmubong, 9.iv.1976, YS Kim; 1♂, GG Aengmubong, 15.iv.1984, GC Lee; 1♀, GG Bogwangsa, 25.v.1975, BG Lee; 2♂, GG Bogwangsa, 17.iv.1983, HC Park; 1♂, GG Bogwangsa, 17.iv.1983, JC Lee; 1♂, GG Bogwangsa, 17.iv.1983, MR Kim; 1♂, GG Bogwangsa, 17.iv. 1983, NS Choi; 3♂, GG Bogwangsa, 23.iv.1983, CH Byun; 1♀, GG Cheonmasan, 28.v.1982, ML Kim; 1♀, GG Cheonmasan, 29.v.1982, ML Kim; 1♀, GG Cheonmasan, 28.v.1982, KS An; 1♀, GG Cheonmasan, 19.v.1972, YR Joo; 1♀, GG Cheonmasan, 8.vi.1968, JJ Kim; 1♀, GG Cheonmasan, 30.iv.1972, JH Yoo; 1♀, GG Pocheon, 22.vi.1972, SN Choi; 1♂, GG Pocheon Wangbangsan, 28.v.1983, CG Im; 1♀, GG Chukryeongsan, 1.v.1999, YC Park; 1♂, GG Ganghwa-do Manisan, 28.iv.1996, HS Won; 1♀, GG Cheonggyesan, 22.iv.1984, MR Kim; 1♀, GG Gapyeong, 6.vi.1994, SM Kim; 1♀, GW Seolaksan (Oh), 24.v.1968, JG Oh; 1♀, GW Inje Bangtaesan, 4−6.vi.1999, JY Yun; 1♀, GW Yanggu Deaamsan, 13.vi.1990, JI Kim; 1♀, GW Cheolwon Galmal Sincheolwon-ri Myeongseongsan, 16.v.1999, MR Kim; 1♀, CB Yeongwol Baekdansan Gwaneumsa, 12.v.2001, SM Ryu; 1♀, GW Taebaek Mungok Danggol Taebaeksan, 6.v.1999, SM Lyu; 1♀, CB Cheongju Guksabong, 17.v.1997, MR Kim; 1♀, CB Chunngju Gyemyeongsan, 18.v.1997, MR Kim; 1♀, CN Gyeruongsan, 5.iv.1997, JB Lee; 1♀, CN Gyeruongsan , 5.iv.1997, JY Lim; 1♀, CN Gapsa, 24.iv.1983, HC Park; 1♂, JB MuJu Deokyusan, 22.v.1983, BS Choi; 1♂, JB Muju Gucheondong, 21.v.1983, ML Kim; 1♀, JJ Gimnyeong, 9.v.1983, MR Kim.

Floral records: Japan: *Brassica campestris*, *Pachysandra terminalis*.

Distribution: Korea (Central, Southern, Jeju); Japan (Hokkaido, Honshu, Shikoku, Kyushu, Tsushima Is.); China; Russia [Far East area].

Region: Eastern Palaearctic.

Korea: GG, GW, CB, CN, JB, JN, JJ.

Subfamily Panurginae

Ae-kkot-beol-bu-chi-a-kwa (애꽃벌붙이아과)

Members of this subfamily have the following morphological characters: forewing with two submarginal cells, and apex of marginal cell truncated.

Genus *Panurginus* Nylander, 1848

Ae-kkot-beol-bu-chi-sok (애꽃벌붙이속)

Panurginus Nylander, 1848 1: 223. TS: *Panurginus niger* Nylander, 1848, monobasic.

59. *Panurginus crawfordi* Cockerell, 1914 (Pl. 19, Female: E; Male: F)

Ae-kkot-beol-bu-chi

Panurginus crawfordi Cockerell, 1914, (8) 13 : 279, Type: male, TL: Japan; TD: USNM.
Panurginus crawfordi: Kim, 1970: 672, 825 (first Korean record); Tadauchi & Lee, 1992: 56; ESK & KSAE, 1994: 266; Lee & Paik, 2003: 135; Paek et al., 2010: 213.

Female. Body length 8 mm.

Pubescence: Hairs on head short, sparse, fine, whitish or only slightly yellowish. Hairs on thorax short to more or less long, sparse but slightly dense on anterior portion of mesoscutum and on mesopleuron, slightly yellowish, not mixed with brownish ones; propodeum bare medially, with whitish hairs laterally; hairs on legs primarily yellowish; tibial scopa scanty, composed of coarse, simple yellowish hairs. Metasoma scanty of hairs, with 1st tergum bare on disc; posterior margins of metasomal terga without hair bands; sparse cilia on metasomal terga as well as dense caudal fimbria yellowish; hairs on metasomal sterna yellowish.

Structure: Labrum smooth and shiny basally, with a triangular projection apically; clypeus longitudinally well convex, smooth, shiny, scattered with weak punctures; supraclypeal area also well convex, smooth, shiny, weakly and sparsely punctate; facial fovea well indicated, separated from eye by a wide space; scape long, shiny and weakly punctate in front; flagellum not elongate, with 3rd antennal segment longer than broad, slightly longer than 4th; postocelli rather close each other; cheeks broader than eyes, roundly convex. Mesoscutum narrowly tessellate-punctate anteriorly, broadly smooth and shiny posteriorly with weak and sparse punctures; scutellum nearly flat or only slightly convex, smooth, shiny, very weakly and densely punctate; propodeum densely tessellate, impunctate, nearly dull or weakly shiny; mesopleuron tessellate, with sparse and weak punctures. Metasoma broad; 1st tergum smooth, shiny, scattered with microscopical fine punctures, with posterior depressions narrow, weakly indicated, very finely tessellate; 2nd and the following terga finely tessellate, impunctate or scattered with microscopical fine punctures, with posterior depressions slightly widened medially, more or less well indicated.

Male. Body length 6–7 mm.

Color: Black; clypeus yellow.

Pubescence: Hairs on head and thorax more or less long, sparse, whitish to slightly yellowish, not mixed with brownish ones. Metasoma scanty of hairs; hairs on metasomal terga yellowish; hairs on legs primarily yellowish.

Structure: Labrum with an apical projection; clypeus almost protuberant but slightly exceeding below beyond line running bases of eyes, shiny, distinctly punctate; supraclypeal area shiny, weakly punctate; frons and vertex just behind ocellar region densely tessellate or occasionally the former slightly shagreened; antennae slightly elongate, with 3rd segment as long as or a little longer than

broad, slightly longer than 4th which is indistinctly broader than long; cheeks roundly convex, shaped as in female, slightly more densely and distinctly punctate than in female. Sculpture of thorax very close to female with horizontal area of propodeum occasionally slightly more coarsely sculptured. Metasoma very finely tessellate or partly nearly smooth, impunctate or scattered with microscopical fine punctures; posterior depressions of metasomal terga well indicated.

Remarks: This species is the only representative of the genus *Panurginus* in Korea. According to Cockerell, this species is a close relative of *Panurginus herzi* Morawitz from Siberia (Hirashima, 1966).

Specimens examined: [JELKU] KOREA: 1♂, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, GN, 9.v.1991, O. Tadauchi; 1♂, same locality and date as above, K. Morimoto; 1♂, same locality and date as above, T. Saigusa; 1♀1♂, Kyong Yeo Meon (ah. 1300 m), Gurye Gun, JN, 10.v.1991, O. Tadauchi; 1♀10♂, Sam Jeon Li, Ma Cheong Meon, Hamyang Gun, GN, 11.v.1991, O. Tadauchi; 2♂, Sim Won Valley, San Nae Meon, Nam Weon Gun, JB, 13.v.1991, O. Tadauchi; 1♂, Jeong Lyong Chy, San Nae Meon, Nam Weon Gun, JB, 14.v.1991, O. Tadauchi. [KEIU] KOREA: 6♀7♂, GG Gapyeong Myeongjisan Seungcheonsa, 5.v.2001, MR Kim; 1♂, GG Aengmubong, 6.v.1973, TS Kim; 1♀, GG Pocheon Idong Dopyeong-ri Myeongseongsan, 16.v.1999, JD Yeo; 1♀, GW Teabaek Sodo-dong Chojeonchon Hambaeksan, 6.v.1999, SM Lyu; 1♀, CB Goesan Joryeongsan, 18.v.1997, MR Kim; 2♂, CB Yeongwol Suju Baekdeoksan Gwaneumsa, 12.v.2001, SM Lyu; 1♀, CB Wolaksan, 30.v.1977, JC Nam; 3♂, CN Seosan Gayasan, 2.v.1997, MR Kim; 1♂, JB Muju Gucheon-dong, 21.v.1983, EJ Hwang; 1♀, JB Muju Gucheon-dong, 22.v.1983, JS Choi. [QIAL] KOREA: 1♀, Mt. Seolbongsan Icheon GG, 10.v.2002, HS Lee; 1♀, Osaek-Seongguksa Seolak GW (YPT), 28.vi.2002, HS Lee; 1♀, Cheoneunsa Mt. Jirisan JN, 27.v.1997, HS Lee; 2♀1♂, Mt. Seokbyeongsan Imgyeri Jeongseon GW, 22.v.2002, JD Yeo; 1♂, Changnyeong GN, 11.iv.1997, HS Lee; 1♀, Bukdaesa Mt. Odaesan Jinbu GW, 30.v.1996, HS Lee; 3♀, Piagol Mt. Jirisan JN, 22.v.1999, HT Kim; 1♂, Mt. Gwanaksan Geumcheon Seoul, 4.v.2013, HS Lee.

Floral records: Japan: This species primarily associates with the flowers of *Brassica* spp. and *Potentilla* spp., *Taraxacarpus*, *Platycarpus*, *Astragalus sinicus*, *Potentilla fragarioides*, *Amelanchier asiatica*, *Brassica campestris*, *Malus pumila* var. *dulcissima* Koidz.

Distribution: Korea (southern Korea); Japan (Honshu, Shikoku, Kyushu); Russia (Far East Area).

Region: Eastern Palaearctic.

Korea: GG, GW, CB, CB, CN, JB, GN.

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Plates

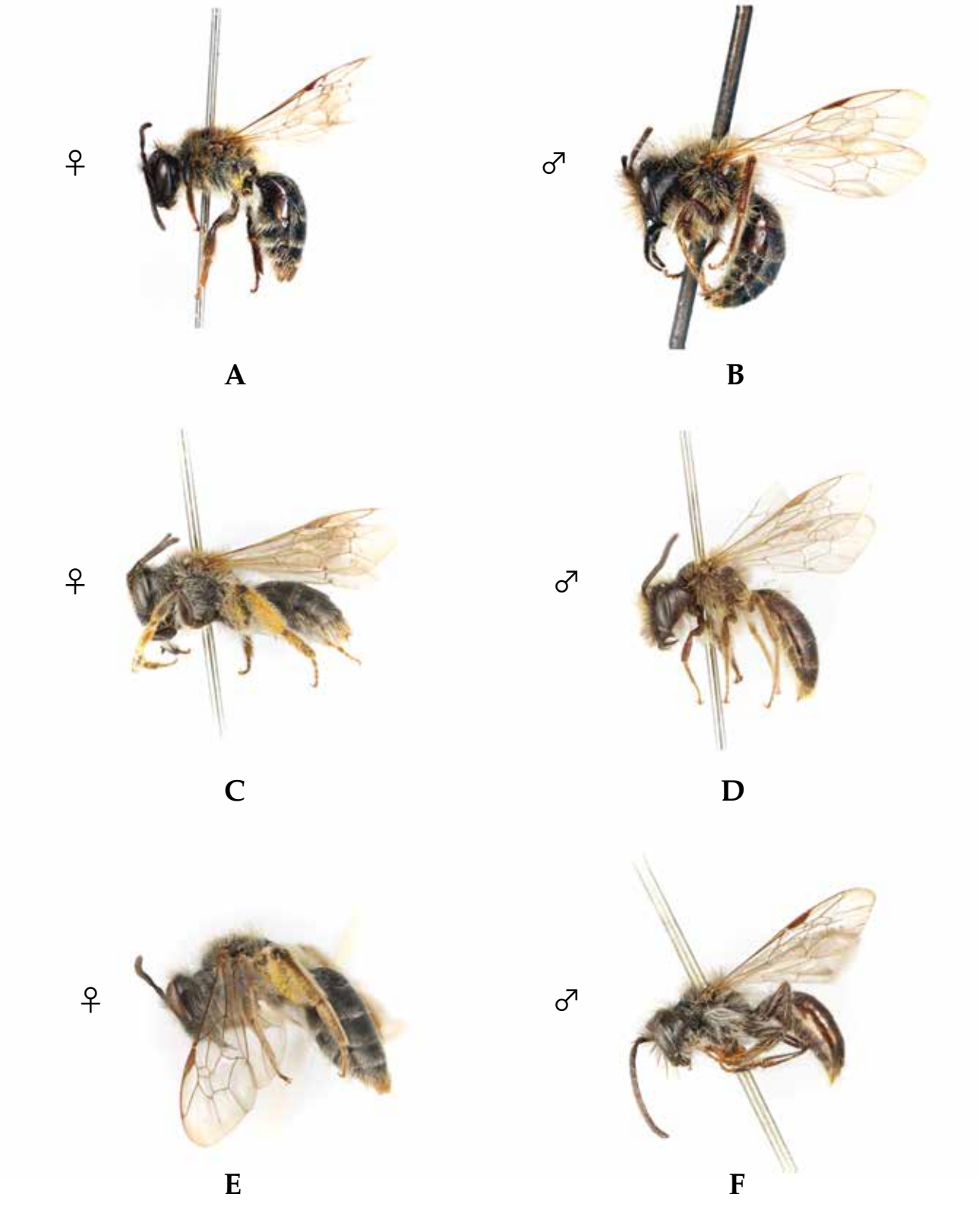

Plate 1. A, B. *Andrena aburana*; C, D. *Andrena benefica*; E, F. *Andrena brevihirtiscopa*.

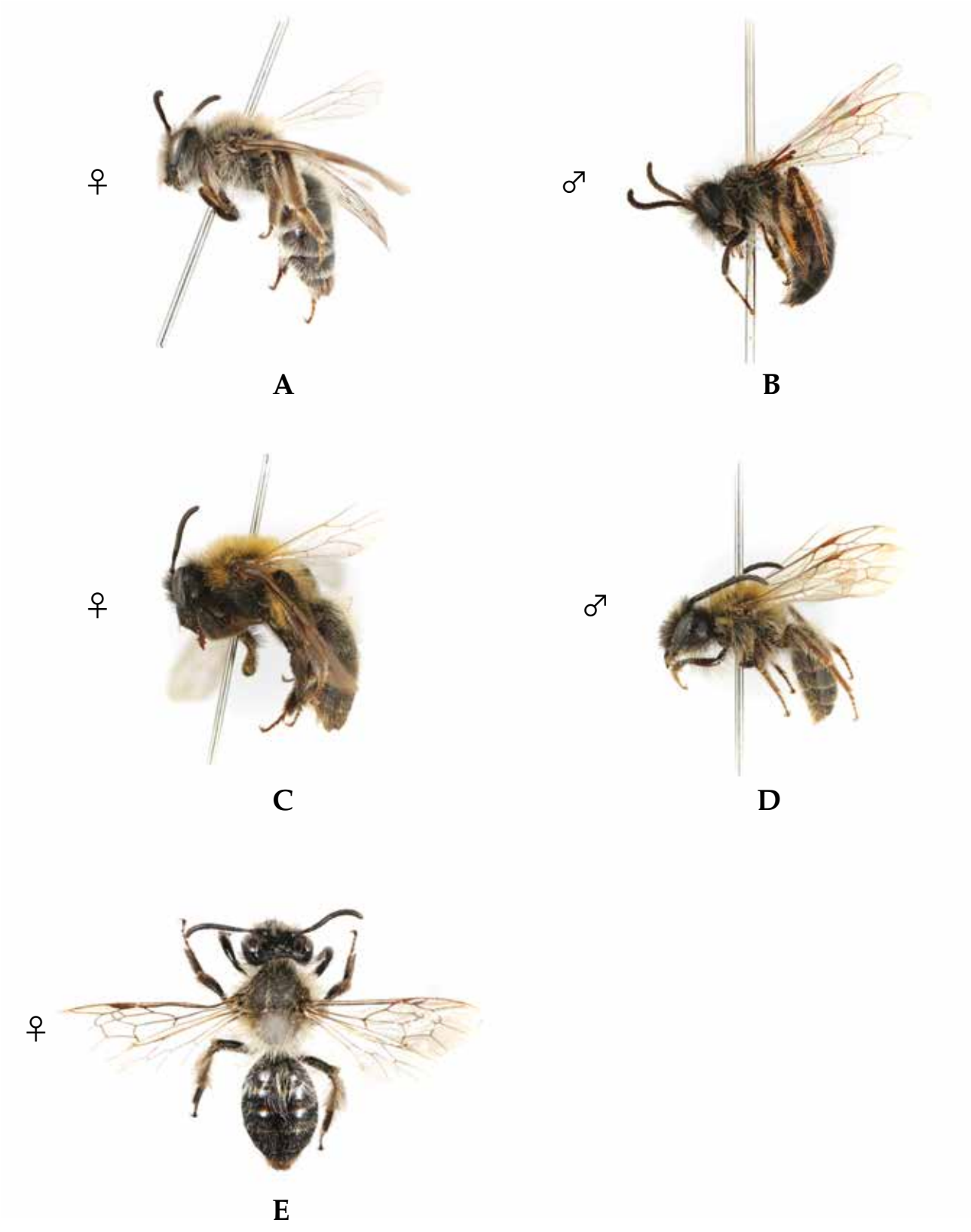

Plate 2. A, B. *Andrena hondoica*; C, D. *Andrena ishiharal*; E. *Andrena kyusani*.

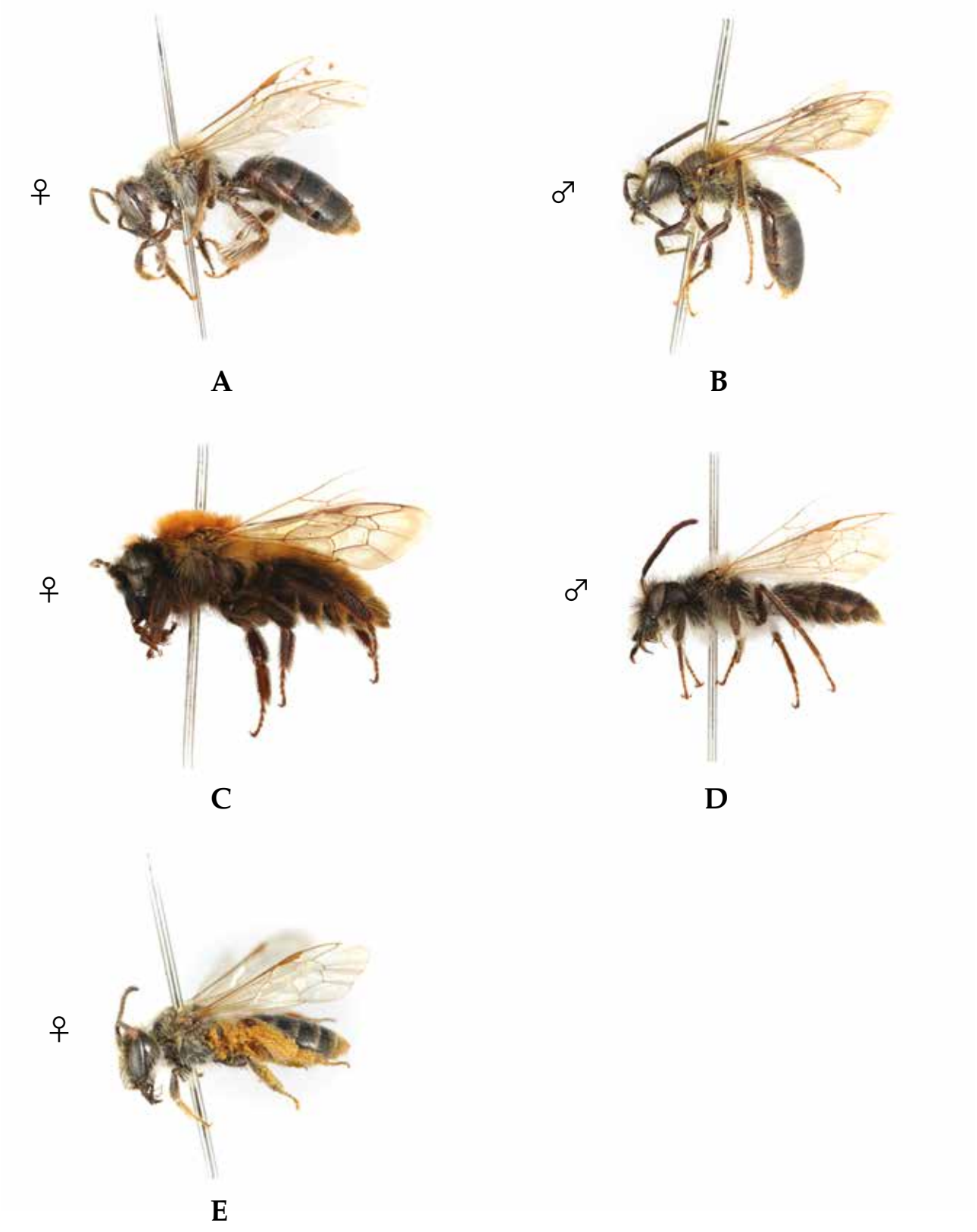

Plate 3. A, B. *Andrena longitibialis*; C, D. *Andrena mikado*; E. *Andrena sakagamii*.

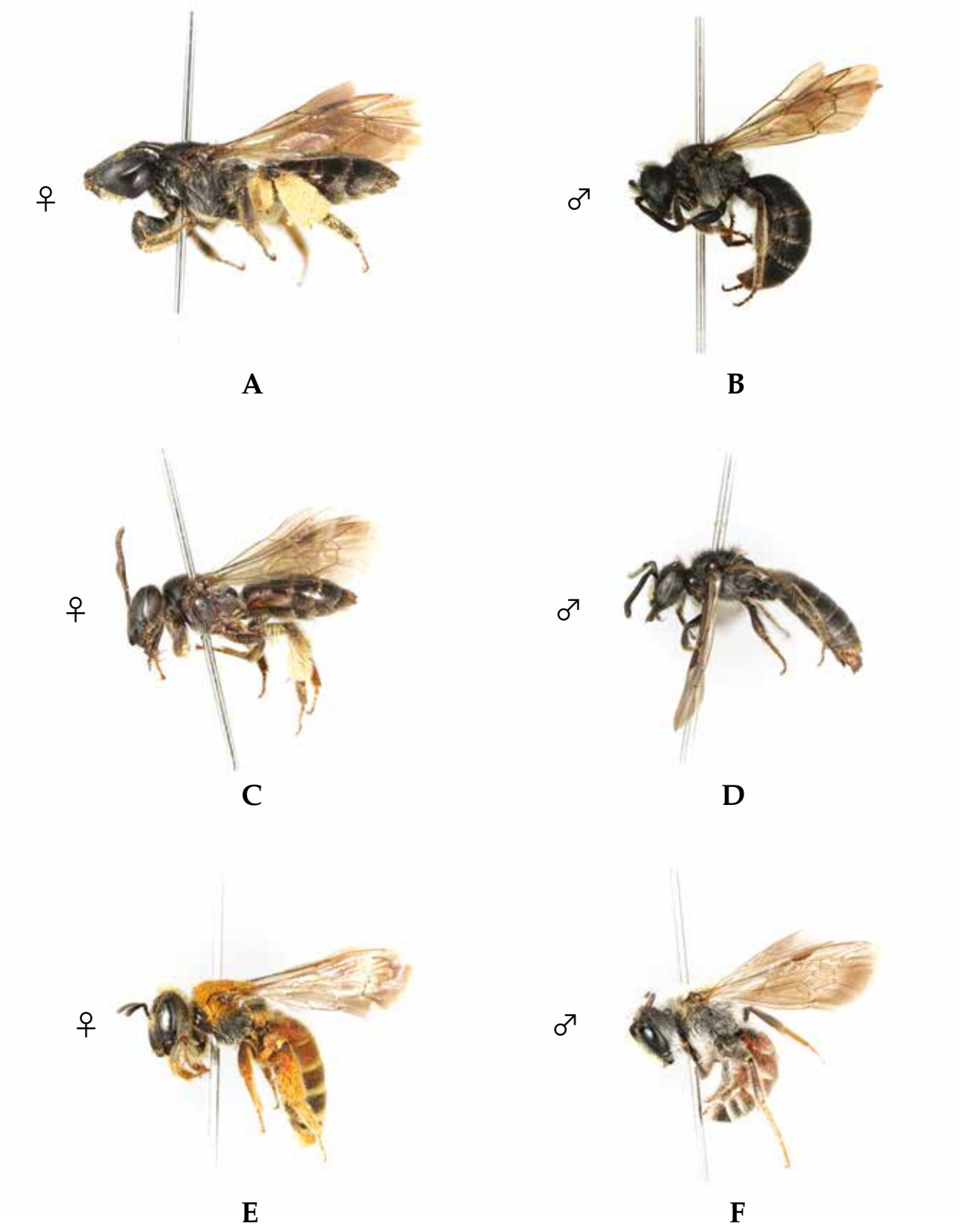

Plate 4. A, B. *Andrena prostomias*; C, D. *Andrena tsukubana*; E, F. *Andrena chengtehensis*.

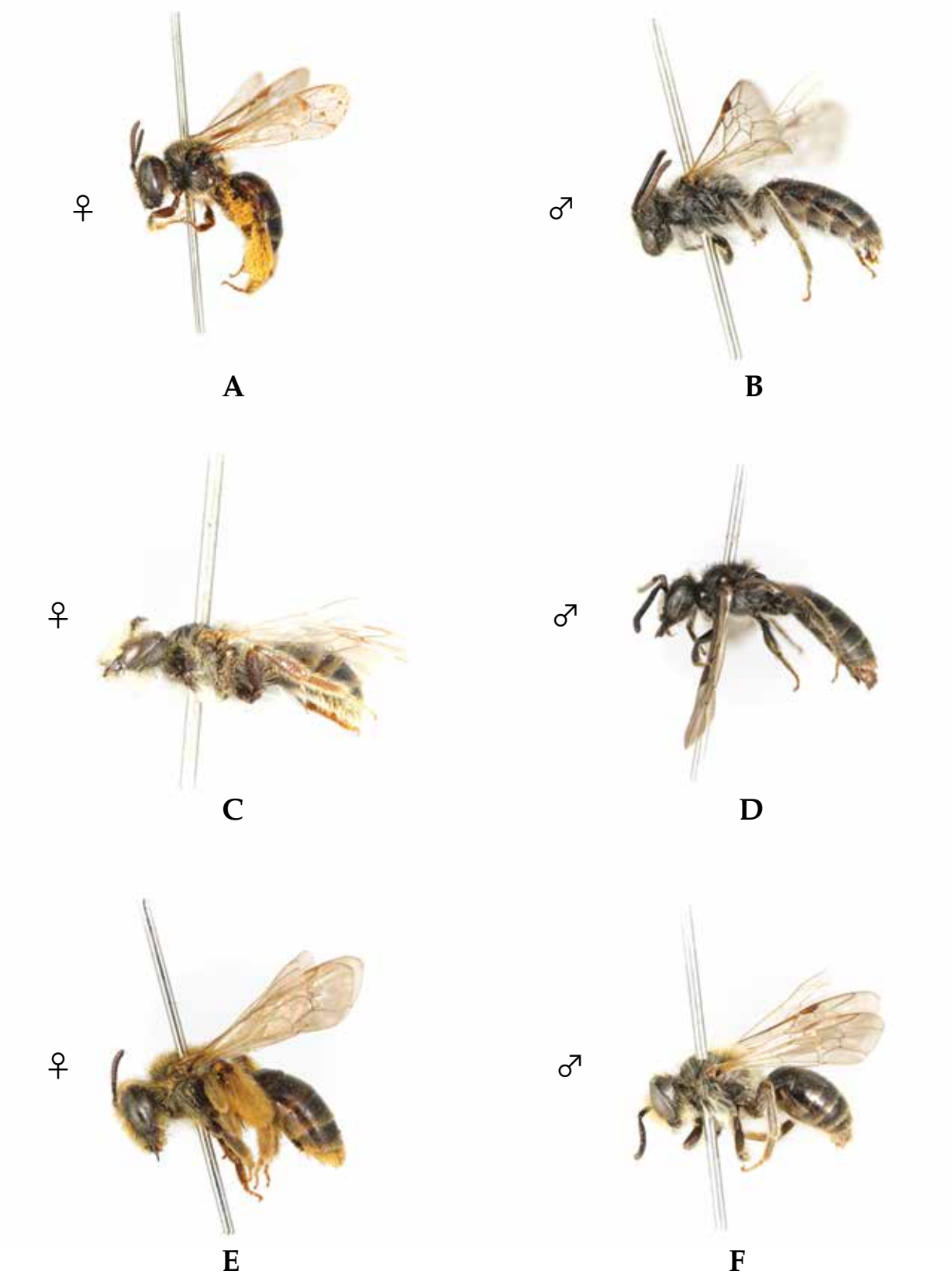

Plate 5. A, B. *Andrena knuthi*; C, D. *Andrena knuthiformis*; E, F. *Andrena okinawana*.

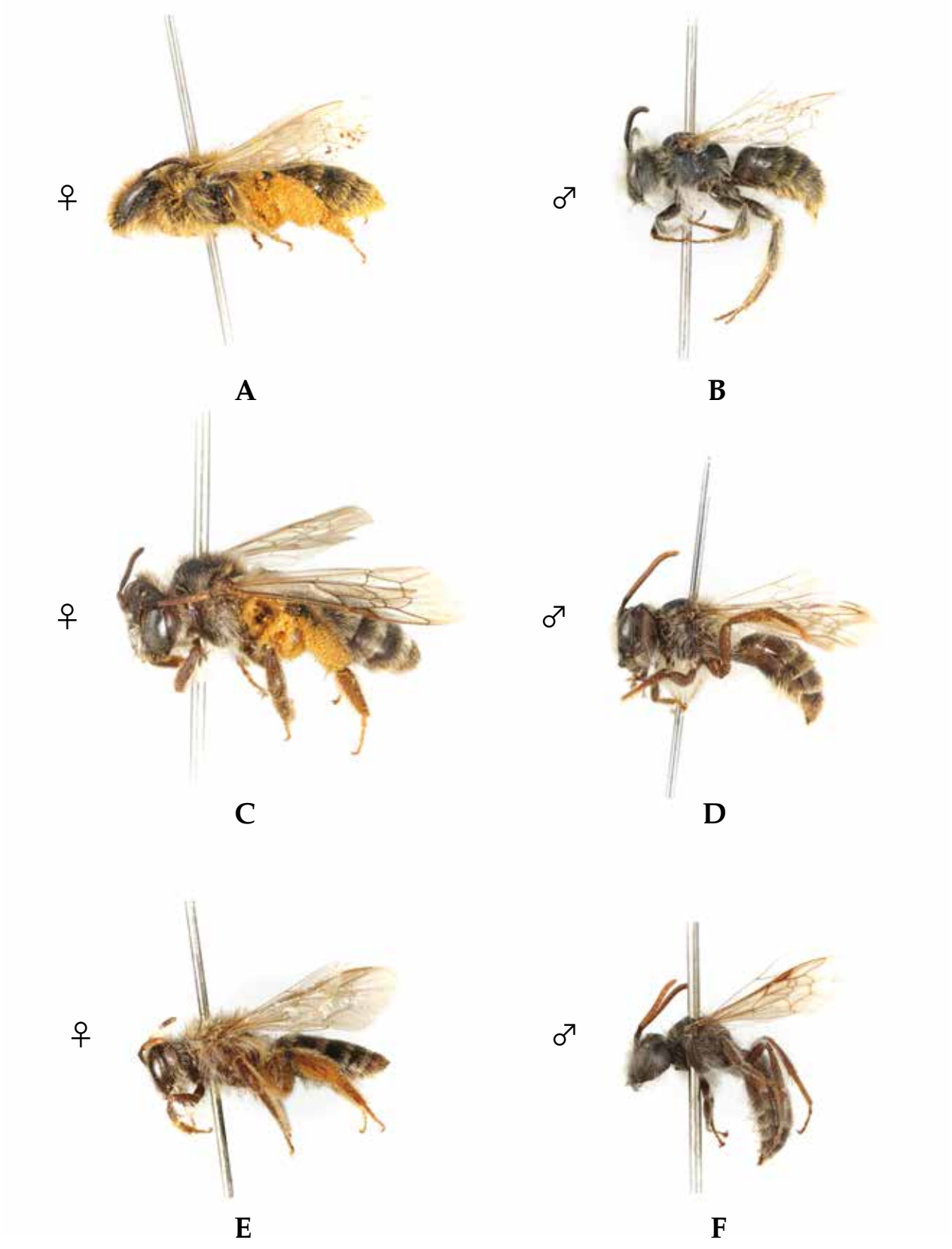

Plate 6. A, B. *Andrena taraxaci orienticola*; C, D. *Andrena denticulate seneciorum*; E, F. *Andrena maetai*.

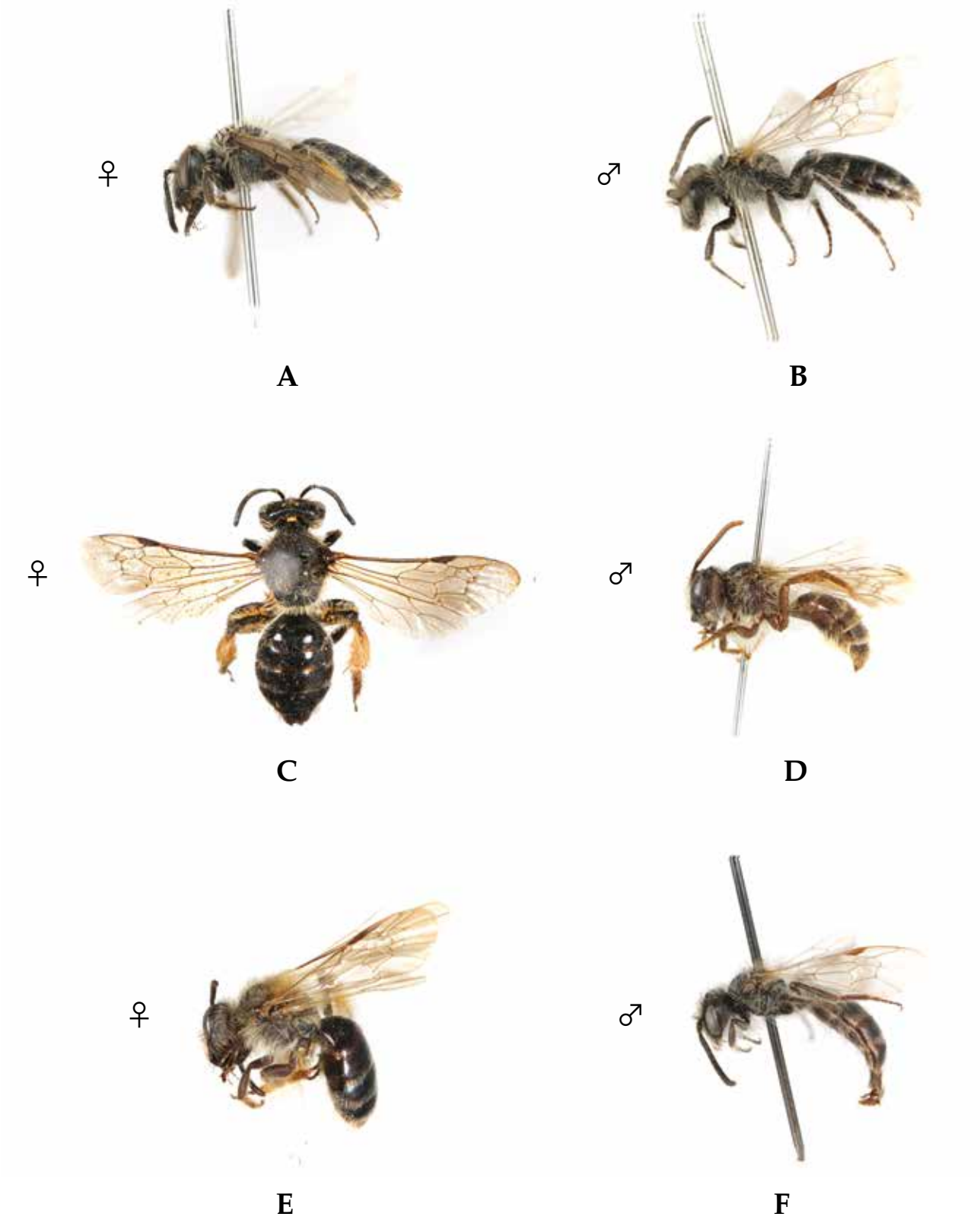

Plate 7. A, B. *Andrena luridiloma*; C, D. *Andrena plumosella*; E, F. *Andrena ruficrus rabicrus*.

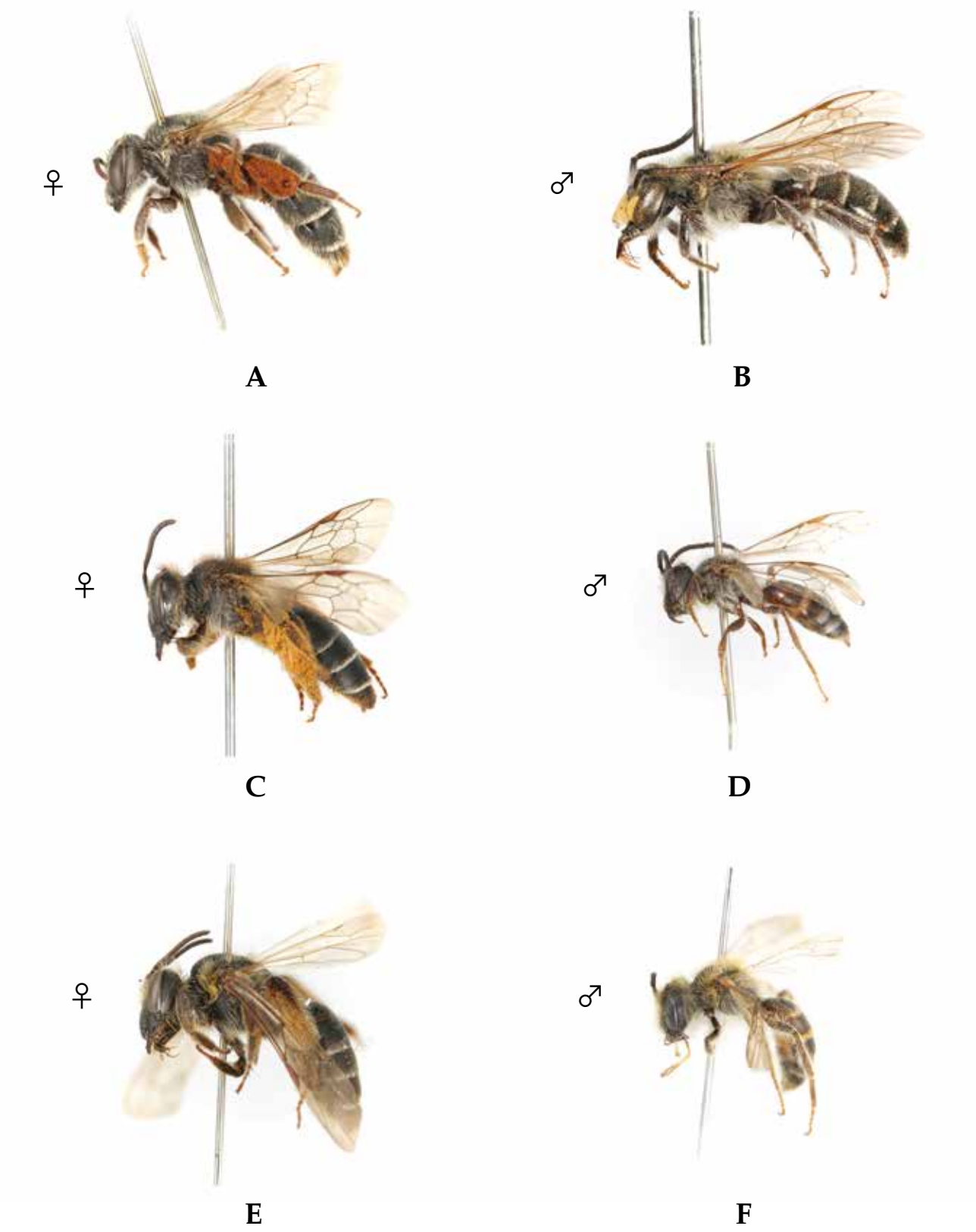

Plate 8. A, B. *Andrena valeriana*; C, D. *Andrena dentata*; E, F. *Andrena macroceps*.

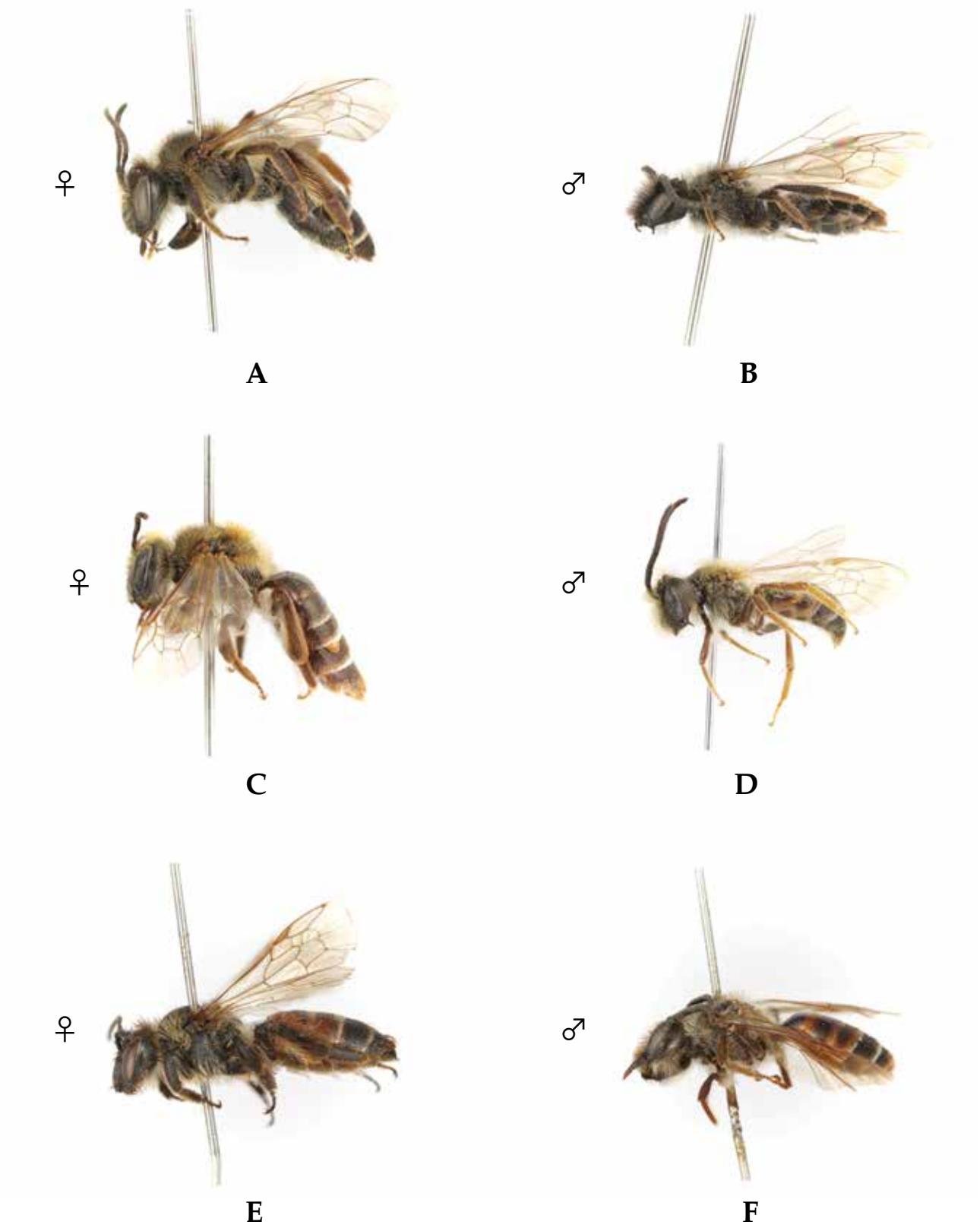

Plate 9. A, B. *Andrena miyamotoi*; C, D. *Andrena nudigastroides*; E, F. *Andrena rosae alfkeni*.

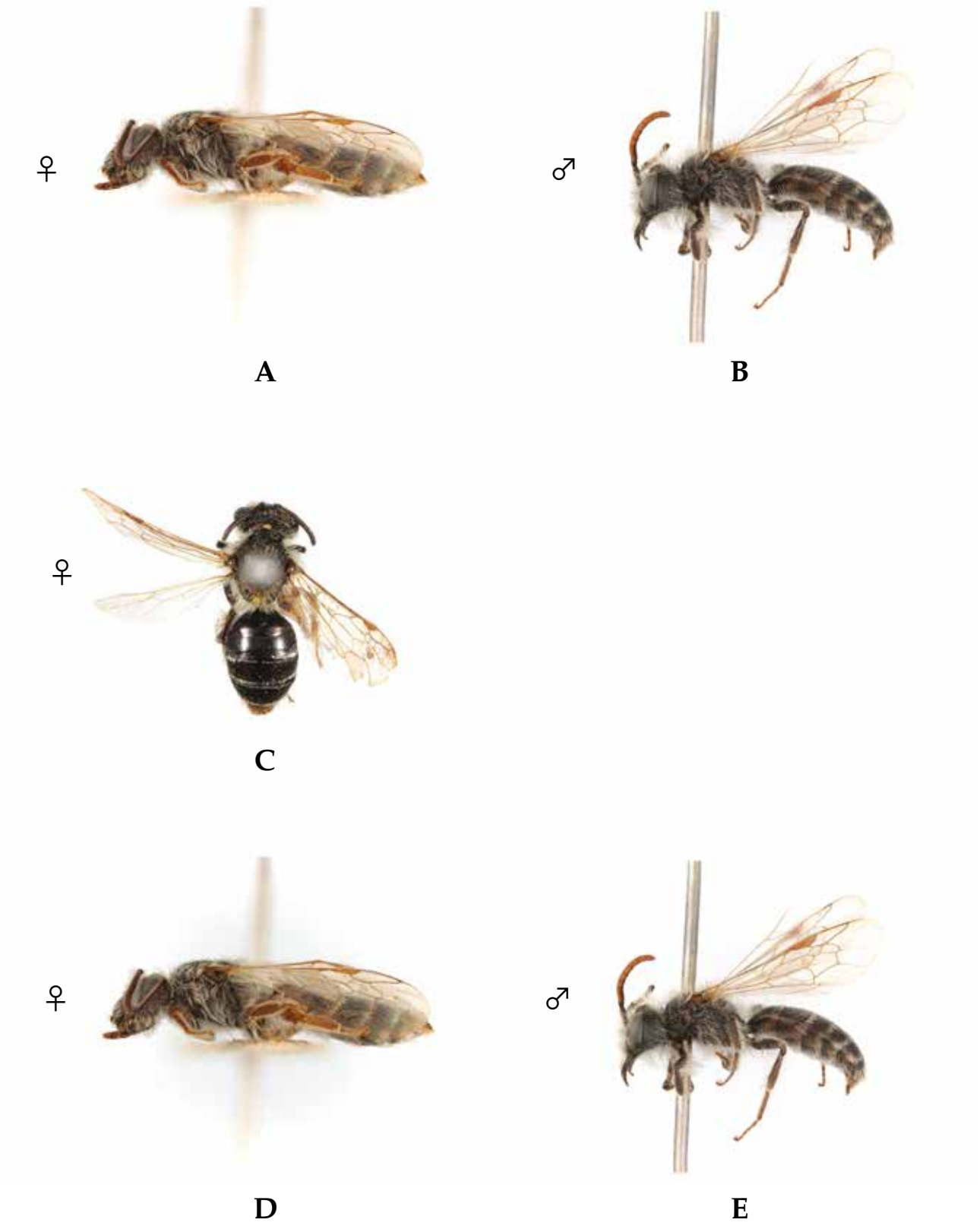

Plate 10. A, B. *Andrena ventralis*; C. *Andrena delicatula*; D, E. *Andrena richardsi*.

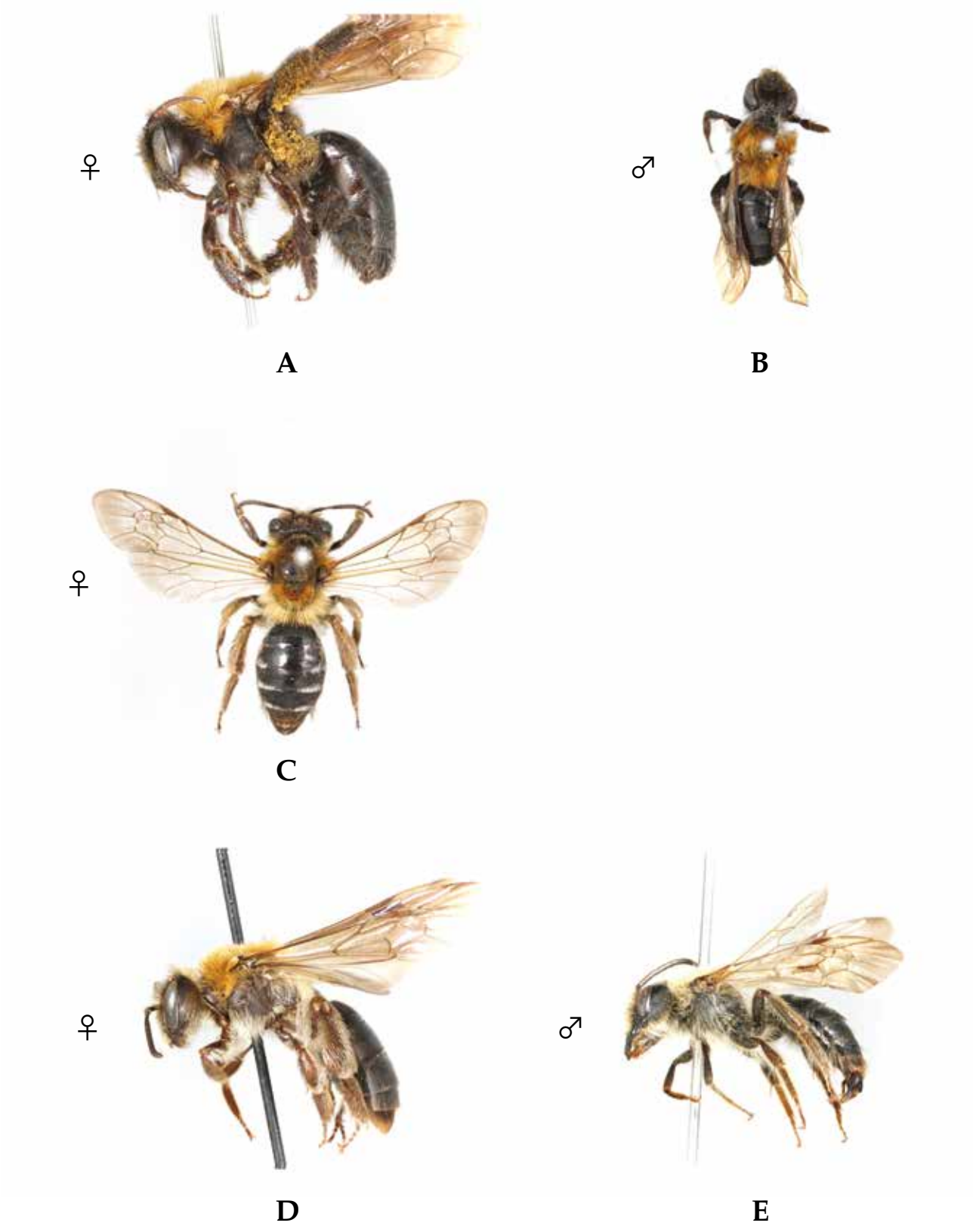

Plate 11. A, B. *Andrena crassepunctata*; C. *Andrena koreana*; D, E. *Andrena parathoracica*.

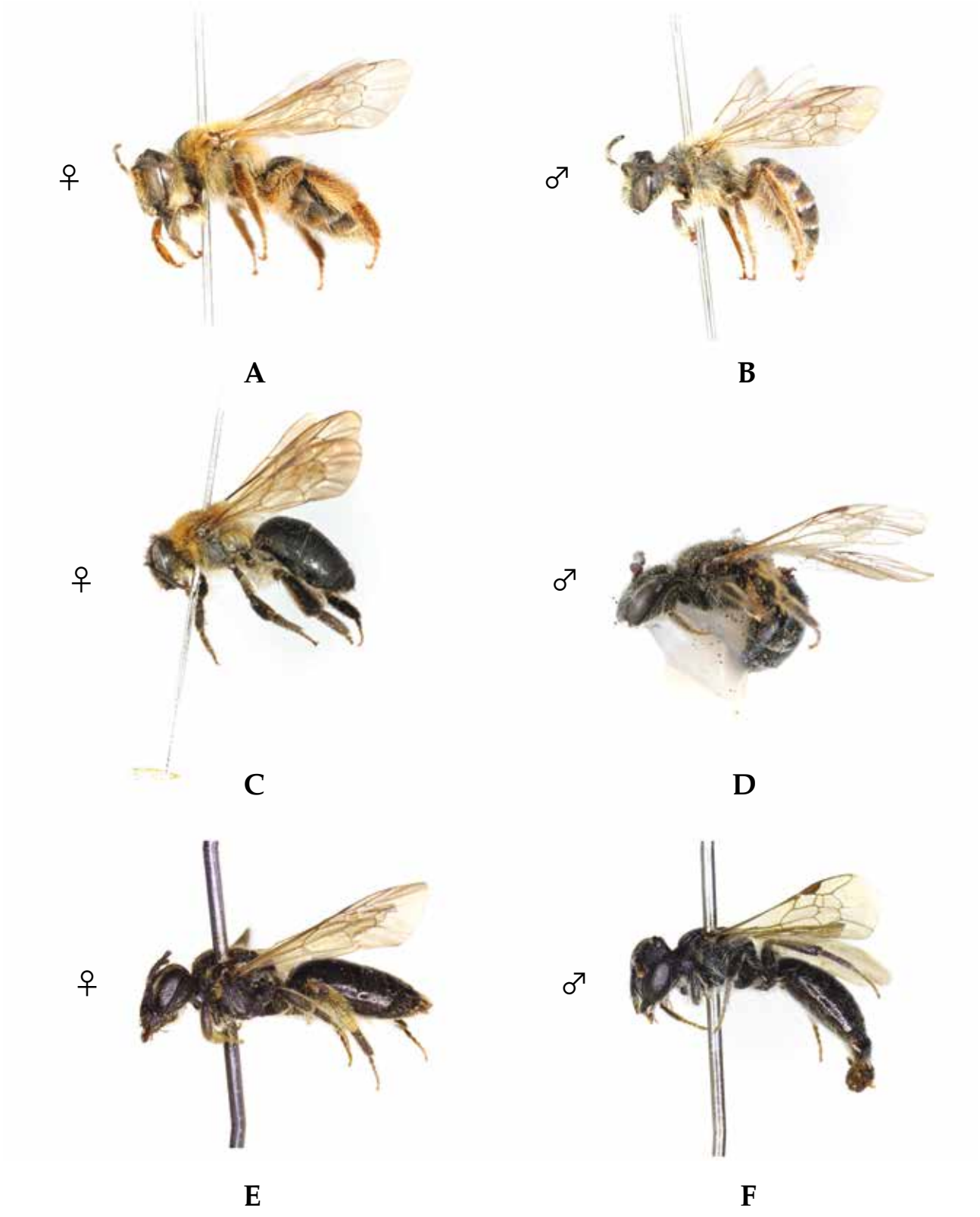

Plate 12. A, B. *Andrena sasakii*; C. *Andrena thoracica sinensis*; D. *Andrena chirisana*; E, F. *Andrena falsifissima*.

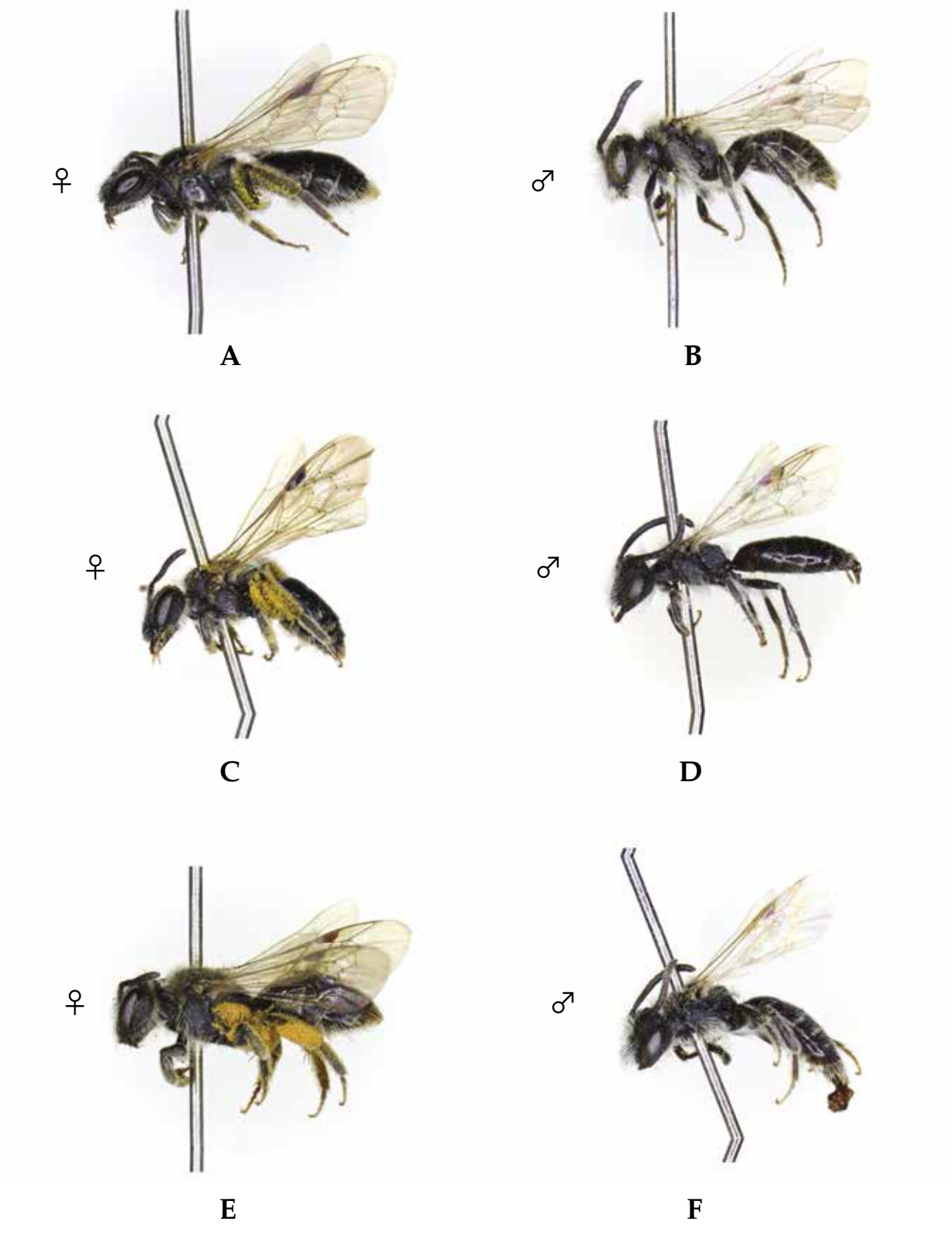

Plate 13. A, B. *Andrena hikosana*; C, D. *Andrena kaguya*; E, F. *Andrena komachi*.

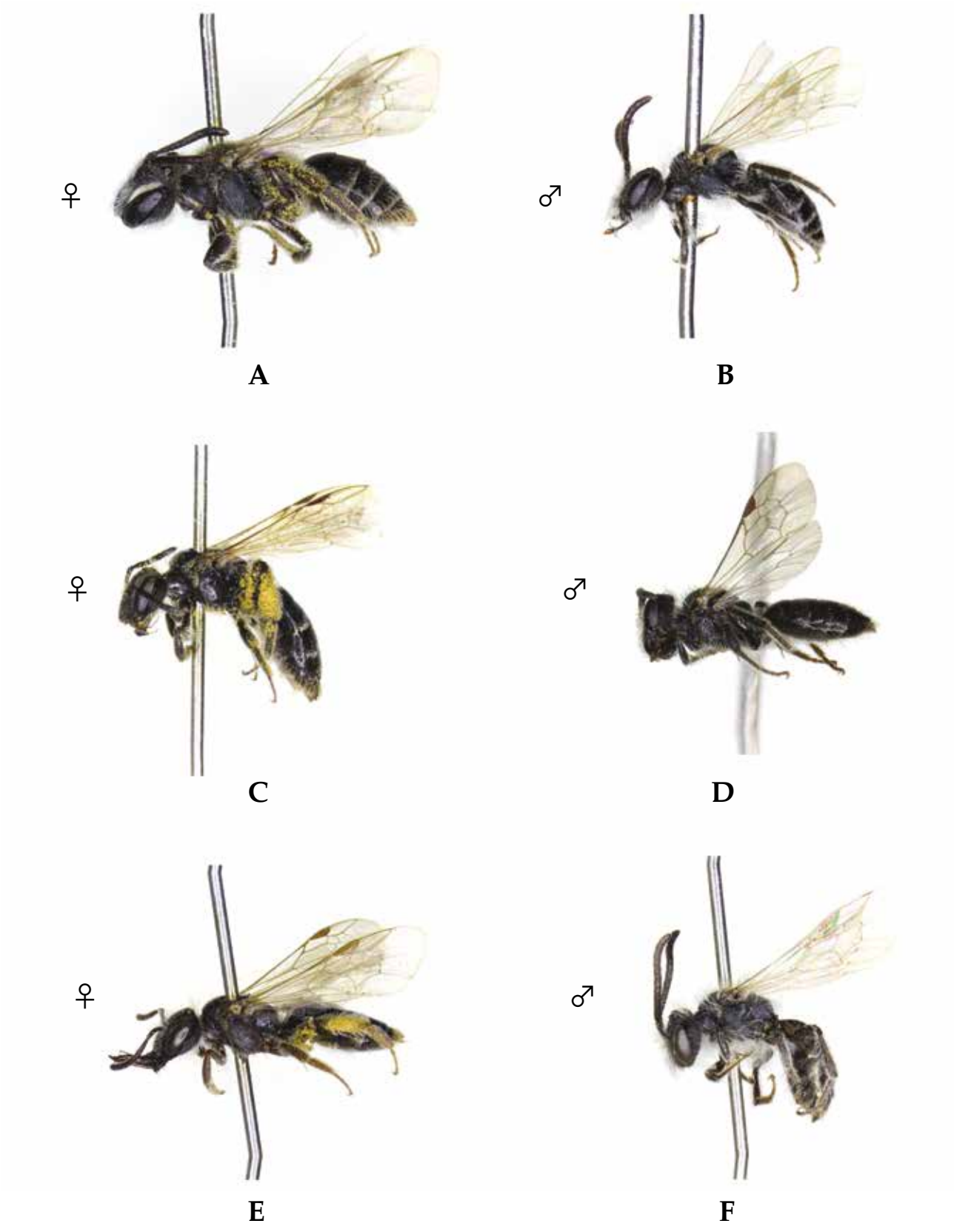

Plate 14. A, B. *Andrena munakatai*; C, D. *Andrena semirugosa brassicae*; E, F. *Andrena sublevigata*.

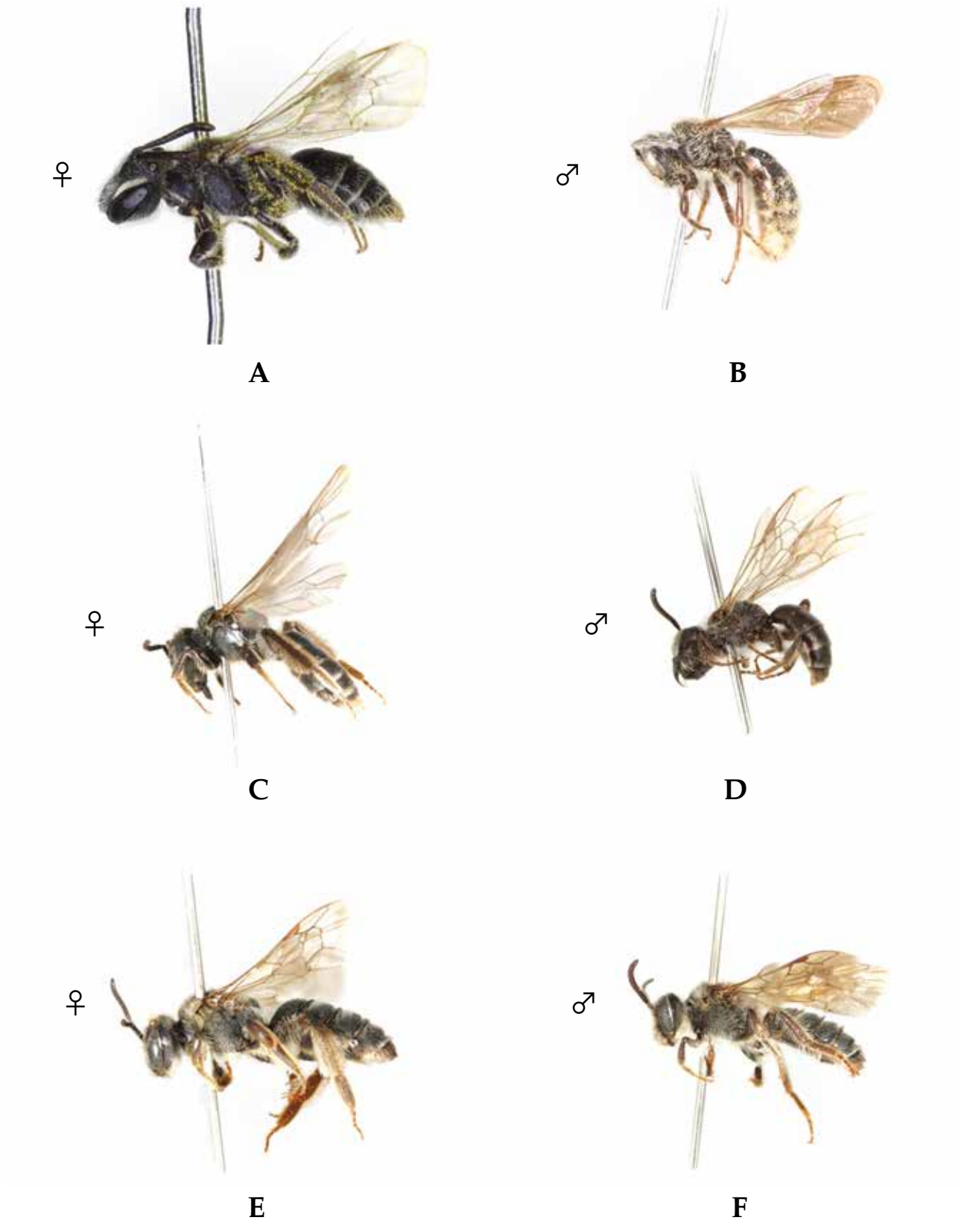

Plate 15. A, B. *Andrena amurensis*; C, D. *Andrena kamikochiana*; E, F. *Andrena japonica*.

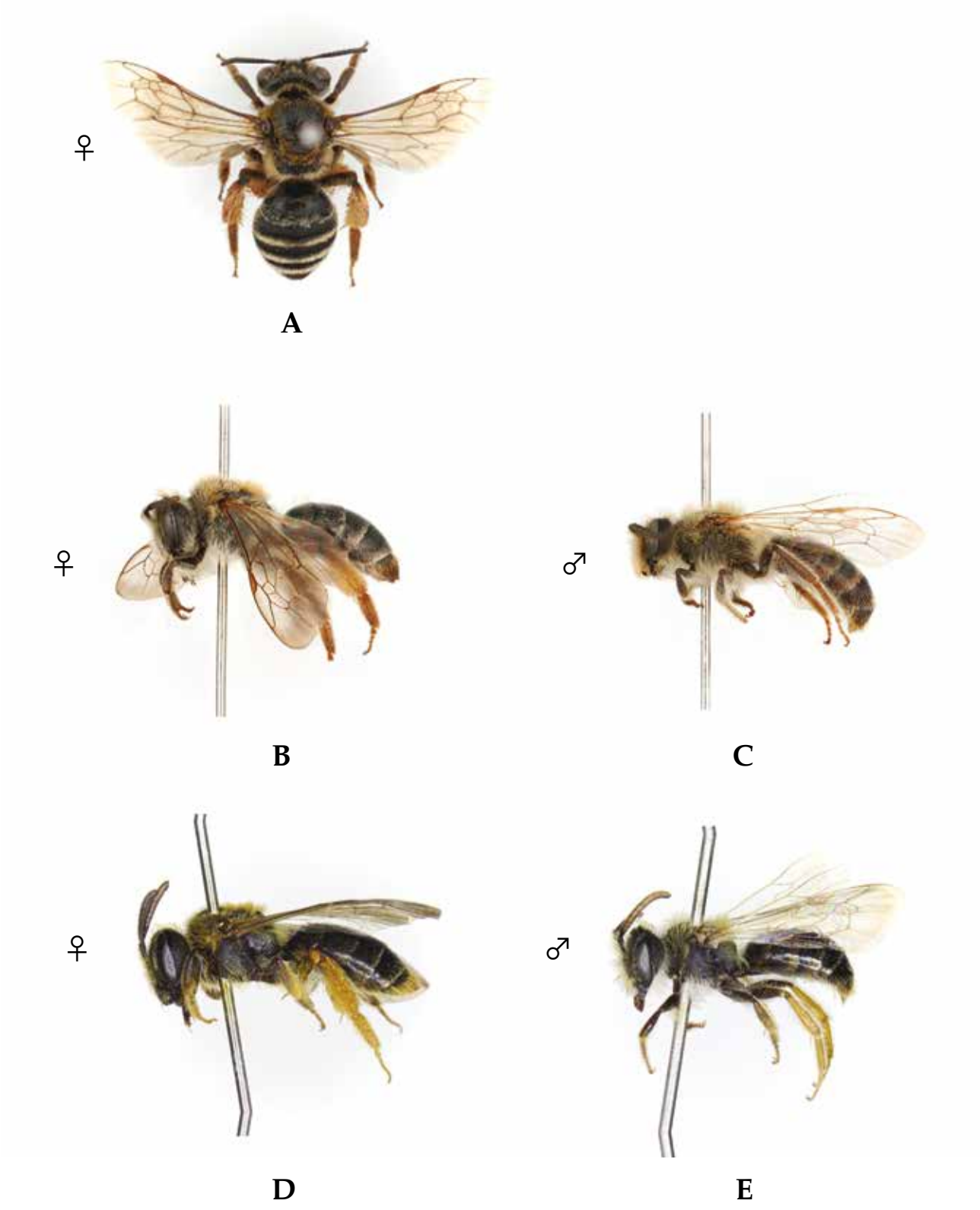

Plate 16. A. *Andrena magnipunctata*; B, C. *Andrena transbaiclica*; D, E. *Andrena fukuokensis*.

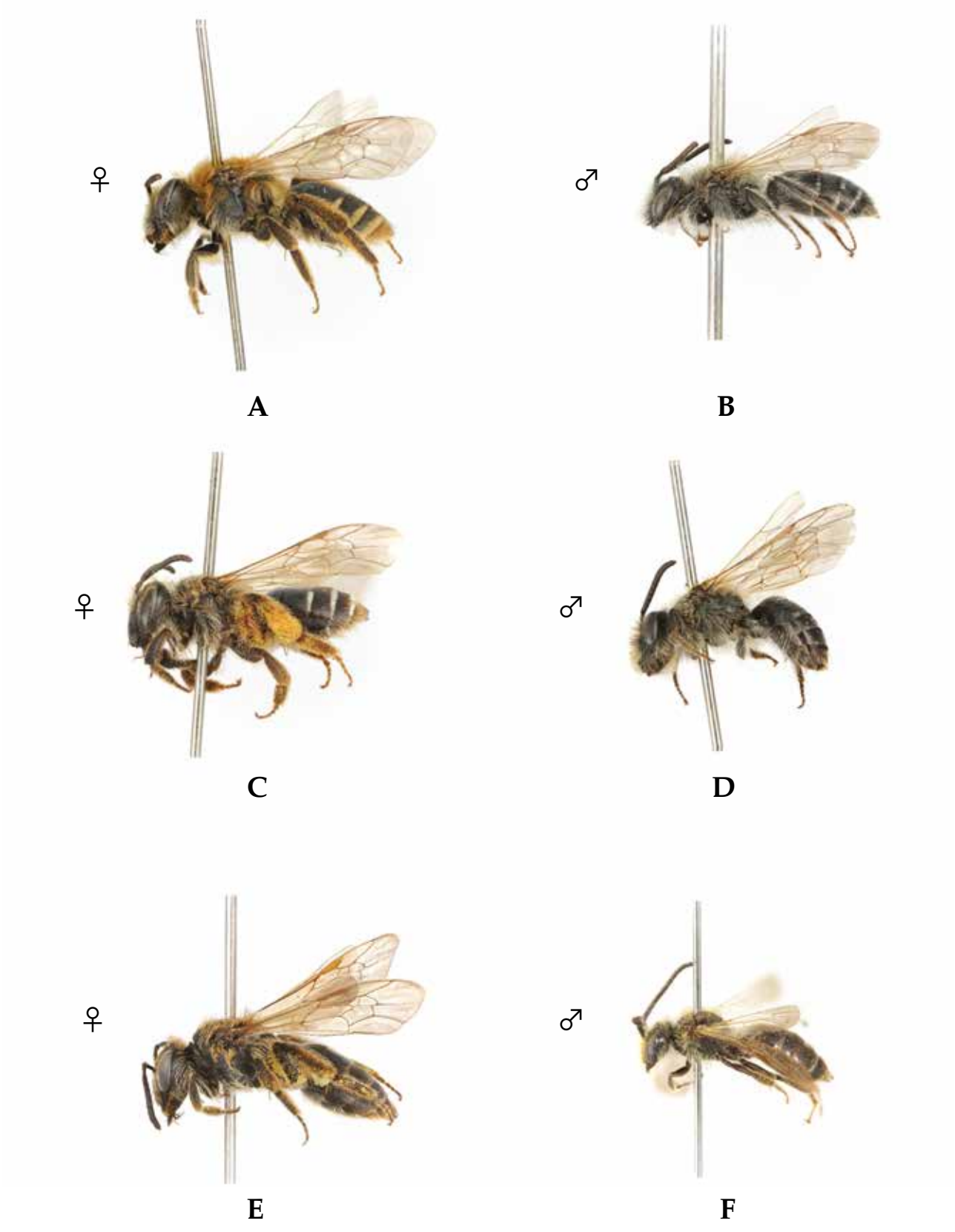

Plate 17. A, B. *Andrena kerriae*; C, D. *Andrena nippon*; E, F. *Andrena opacifovea*.

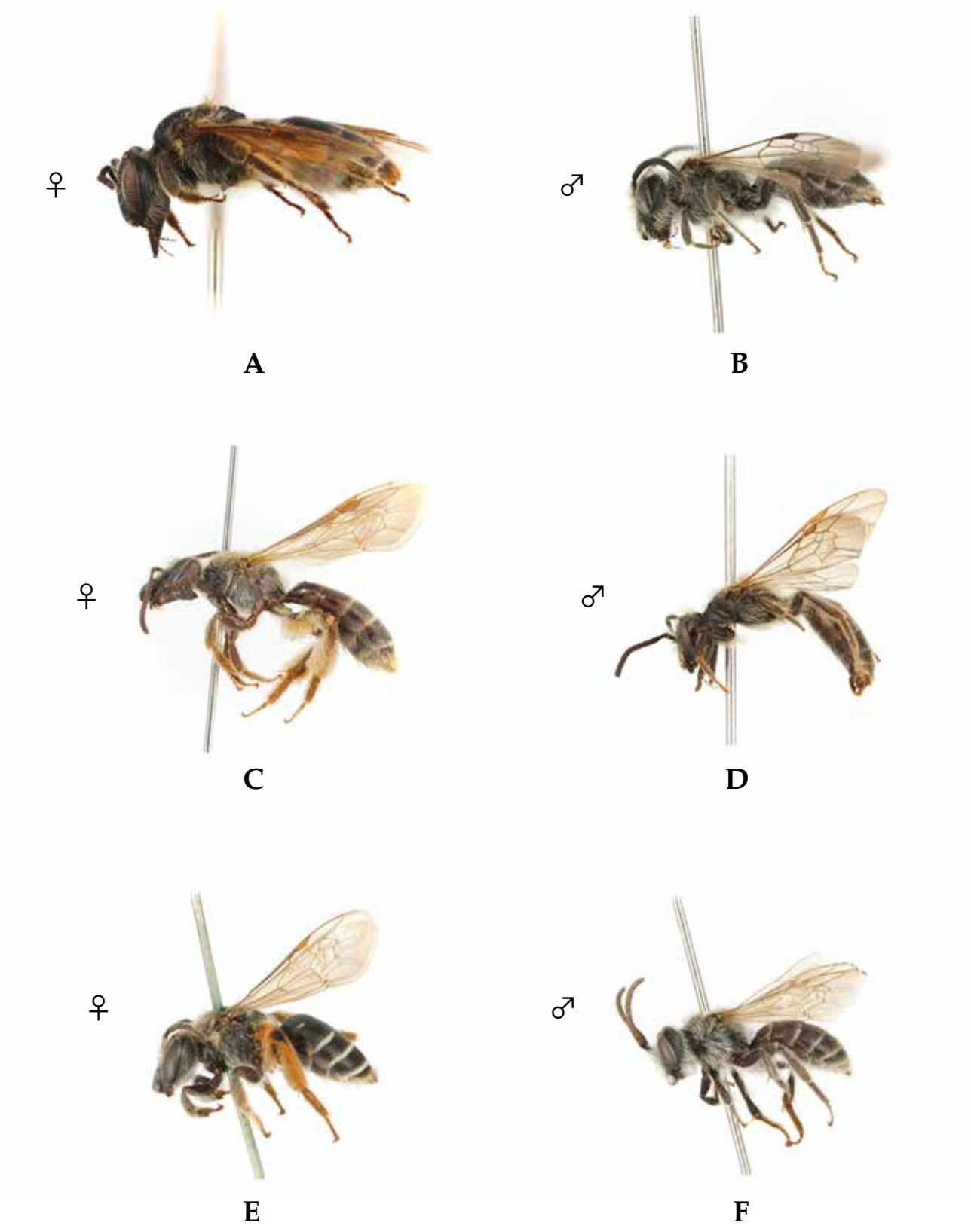

Plate 18. A, B. *Andrena yamato*; C, D. *Andrena halictoides*; E, F. *Andrena ezoensis*.

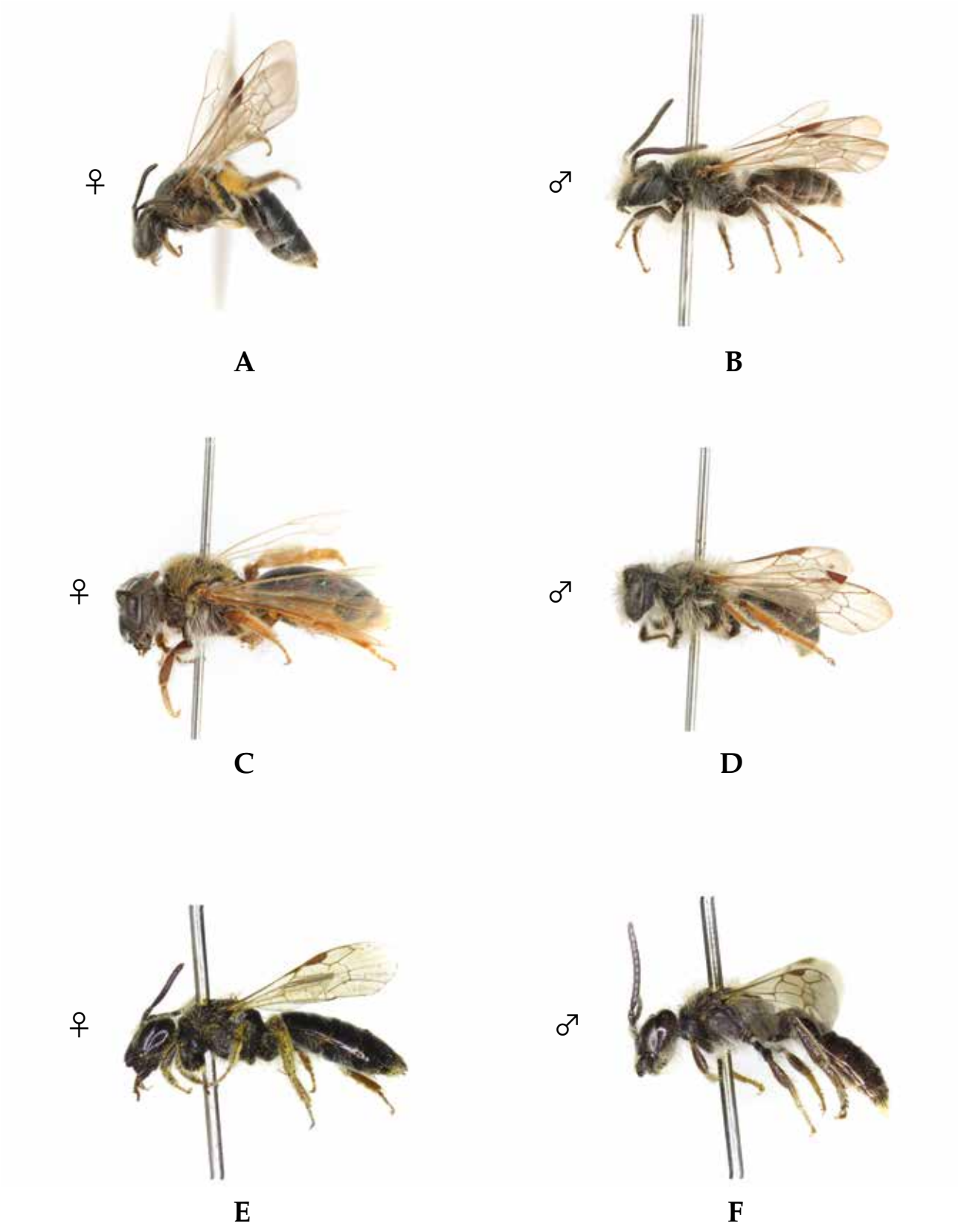

Plate 19. A, B. *Andrena foveopunctata*; C, D. *Andrena haemorrhoa japonibia*; E, F. *Panurginus crawfordi*.

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